

Utah BLM Statewide
Wilderness Draft
Environmental Impact
Statement

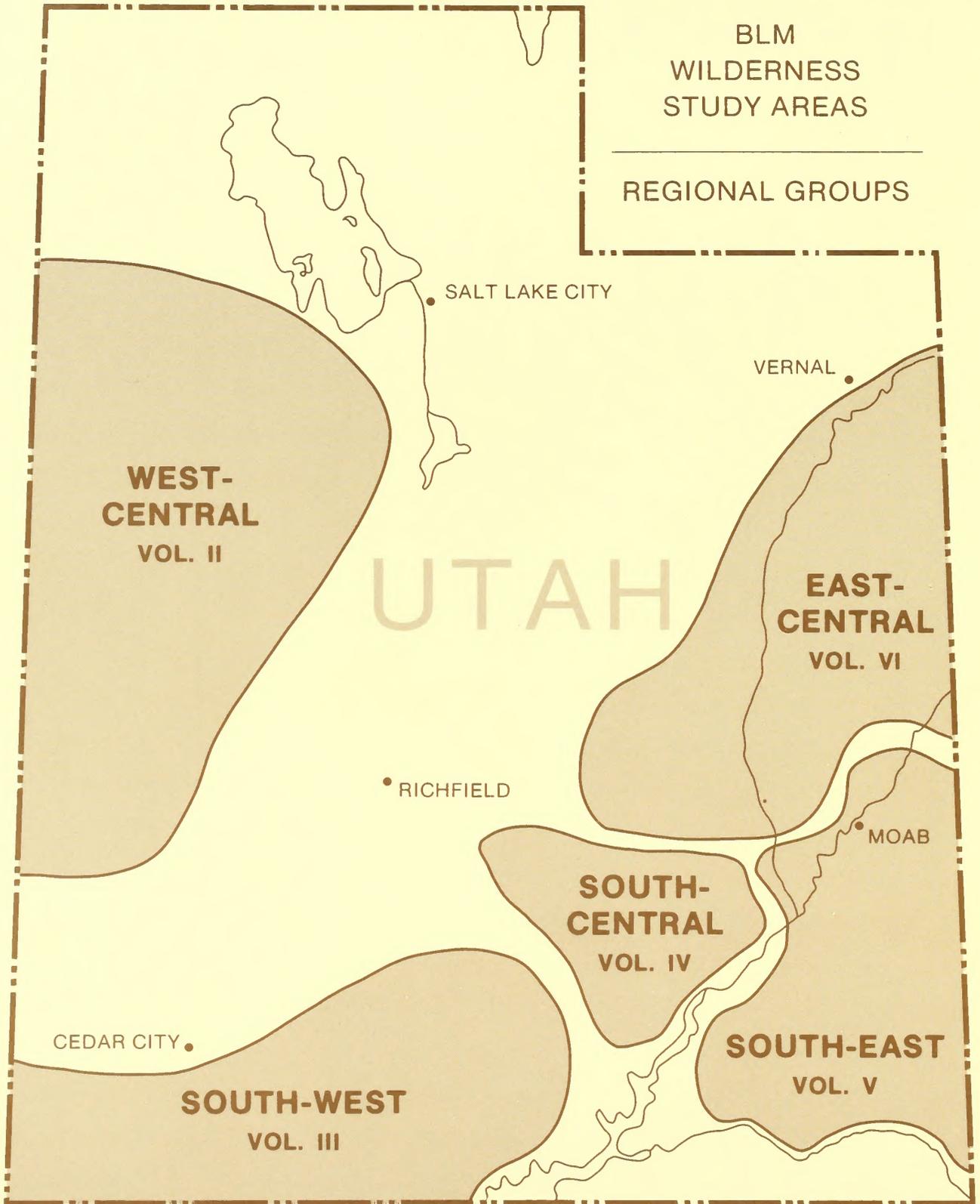
Volume III
Part B
South-West
Region



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

March 3





This is **Volume III** of a six volume set. Volume I is the statewide overview. It contains the Glossary and Appendices for all volumes. Volumes II-VI contain analyses for individual Wilderness Study Areas.

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Volume III Part B South-West Region

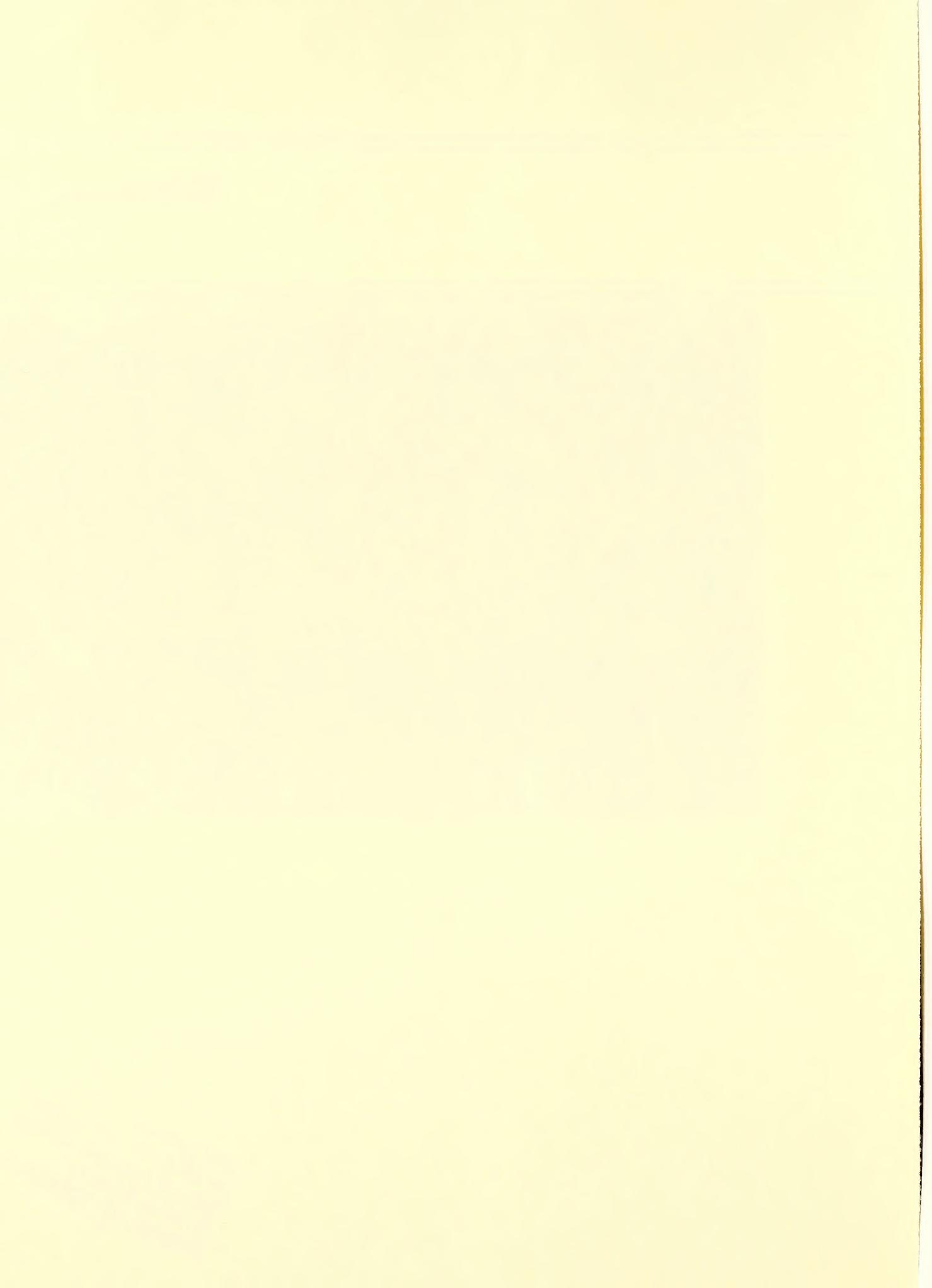
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Burning Hills WSA	_____
Death Ridge WSA	_____
Phipps-Death Hollow ISA Complex	_____
Steep Creek WSA	_____
North Escalante Canyons/The Gulch ISA Complex	_____
Carcass Canyon WSA	_____
Scorpion WSA	_____
Escalante Canyons Tract 5 ISA Complex	_____
Fifty Mile Mountain WSA	_____
Red Butte WSA	_____
Spring Creek Canyon WSA	_____
The Watchman WSA	_____
Taylor Creek Canyon WSA	_____
Goose Creek Canyon WSA	_____
Beartrap Canyon WSA	_____

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Wahweap WSA



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WAHWEAP WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	6
Alternatives Considered and Eliminated from Detailed Study	6
Alternatives Analyzed	7
No Action Alternative	7
All Wilderness Alternative	8
Partial Wilderness Alternative (Proposed Action)	14
Summary of Environmental Consequences	18
AFFECTED ENVIRONMENT	18
Air Quality	18
Geology	18
Soils	21
Vegetation	21
Water Resources	22
Mineral and Energy Resources	22
Wildlife	25
Forest Resources	25
Livestock and Wild Horses/Burros	25
Visual Resources	25
Cultural Resources	26
Recreation	26
Wilderness Values	26
Land Use Plans and Controls	28
Socioeconomics	28
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	30
Analysis Assumptions and Guidelines for All Alternatives	30
No Action Alternative	30
All Wilderness Alternative	33
Partial Wilderness Alternative (Proposed Action)	37
BIBLIOGRAPHY	41

WAHWEAP WSA

(UT-040-248)

INTRODUCTION

General Description of the Area

The Wahweap Wilderness Study Area (WSA) is located on the Kaiparowits Plateau 2 miles north of Glen Canyon City, Utah. It extends on the south almost to Highway 89 and is bounded by Cottonwood Canyon on the west, the road from Grosvenor Arch to Horse Mountain on the north, and the Smoky Mountain-Head of the Creeks roads on the east. There are 134,400 acres of public land and 9,766 acres of State land enclosed within the WSA. The WSA is administered by the Kanab Resource Area of the BLM Cedar City District.

The WSA is characterized by a tilted topography with south-facing escarpments and gently northward-sloping benches. Over 70 percent of the WSA is covered by pinyon-juniper vegetation; the remainder of the area is covered by desert shrubs.

Annual precipitation in the Wahweap WSA is variable due to the large size of the unit and variations in altitude. The overall annual average is 12 inches. Highest monthly precipitation occurs from July through December, during which time two-thirds of the yearly total falls. Intensive thunderstorms are common during the summer months.

Temperatures vary greatly with aspect and altitude. July and January are the warmest and coldest months, respectively. July temperatures range from 50 degrees Fahrenheit (F) to over 100 degrees F, while the January range is from below 0 to 60 degrees F.

Specific Issues Identified in Scoping

General issues pertaining to the WSAs are discussed in Volume I. Issues raised during the study phase are potential for coal and oil and gas development in the WSA, the lack of outstanding opportunity for primitive recreation, and the potential for land treatment in the WSA.

Issues raised during the spring of 1984 public scoping meetings (USDI, BLM, 1984) are responded to below.

1. *Comment:* The Draft Site-Specific Analysis (SSA) states: "The WSA contains many roads and ways and is quite accessible." How was this portion of the WSA identified as meeting the naturalness criterion?

Response: The ways were considered substantially unnoticeable during the *BLM Intensive Wilderness Inventory* (USDI, BLM 1980b). The *Wilderness Inventory Handbook* (USDI, BLM, 1978) criteria for naturalness consider the noticeability of ways rather than the accessibility of the inventory unit. Substantially unnoticeable ways are thus permissible within the definition of naturalness. Roads are prohibited by statute and are "cherry-stemmed" out of the natural area.

2. *Comment:* The SSA conclusion that the intrusions in the Coyote Creek area south of Riggs Bench are substantially unnoticeable is wrong.

Response: The conclusion that intrusions in the Coyote Creek area are substantially unnoticeable is an inventory decision of the Utah State Director upheld by the Interior Board of Land Appeals (IBLA) on appeal.

3. *Comment:* Private field analysis submitted during the inventory phase substantiates extensive evidence of coal exploration, including one way and drill pads, in areas of the WSA.

Response: Imprints that remain in the WSA include coal exploration ways. Mineral interests use off-road vehicles (ORVs) in the area. The way and drill pads were determined to be substantially unnoticeable by the inventory decision. This was upheld in an IBLA ruling.

4. *Comment:* There are inconsistencies within the SSA. It is stated that certain mineral resource potentials are low and then that these resources would be foregone.



Response: The locatable mineral resource potential within the WSA is low and would be foregone if all claims lacked validity under the All Wilderness Alternative. Development work, extraction, and patenting would be allowed to continue only on existing valid claims.

5. *Comment:* Juniper trees on the now defunct site of the Kaiparowits Powerplant on Four Mile Bench are among the oldest of their species anywhere. This should be a consideration in decisions affecting this WSA.

Response: The scientific value of the Four Mile Bench juniper trees is identified as an optional wilderness value under Criterion 1 of the "Wilderness Study Policy" (USDI, BLM, 1982b). All criteria and quality standards will be evaluated and weighed in the Wilderness Study Report.

6. *Comment:* The Wahweap SSA notes the significant scientific value of the Four Mile Bench old tree area. Nonetheless, this tract is not inside recommended wilderness designation. Why?

Response: The Four Mile Bench old tree area is inside the WSA boundary for the All Wilderness Alternative. During scoping for the Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

7. *Comment:* The occurrence of the sensitive plant species *Cymopterus higginsii* in or near this WSA should be a factor in the decisionmaking process.

Response: The BLM is committed under the Endangered Species Act, as amended, to the protection of threatened and endangered plant species. The effects of designation or nondesignation are described in the Vegetation sections of this document.

8. *Comment:* This WSA should not be designated wilderness due to the conflict between preservation of wilderness characteristics and development of coal and other mineral resources.

Response: The preliminary suitability recommendation was made on the basis of the coal resources within the WSA, but is considered only as an alternative discussed in the Mineral and Energy Resources sections of this document. It may or may not be the final recommendation.

9. *Comment:* The range improvements proposed for this WSA would seem to argue against wilderness designation. However, the likely adverse impacts from all the proposed and possible developments should strengthen the case for designation of this WSA.

Response: Existing rangeland developments could be maintained in a manner least degrading to wilderness values. New rangeland developments would be allowed on a case-by-case basis, if necessary for resource protection and the effective management of these resources, provided that wilderness protection standards are met. The impacts of the proposed range improvements on wilderness values are described in the Environmental Consequences, No Action Alternative section.

10. *Comment:* This WSA contains Anasazi sites that should be protected by wilderness designation.

Response: Antiquities are protected by Utah and Federal statutes regardless of their status as wilderness. Depending on the circumstances of the site, wilderness designation could enhance or hinder the enforcement of these laws.

11. *Comment:* There is no justification offered in the SSA for the conclusion that bench areas (Four Mile, Jack Riggs, and Horse Flat) do not have solitude.

Response: The bench areas such as Four Mile Bench, Jack Riggs Bench, and Horse Flat are not considered to have solitude due to

the lack of screening. The remand reassessment decision of October 14, 1983 was not appealed and is a final inventory decision. This decision determined that only the Dakota Sandstone area possessed an outstanding opportunity for solitude.

12. *Comment:* The SSA conclusion that there is no outstanding opportunity for primitive recreation is erroneous. Many have reported exceptional backpacking experiences in the area. How was the "intrinsic analysis" conducted and why did it reach its erroneous conclusion?

Response: The BLM wilderness inventory concluded that the unit did not contain a variety of primitive recreation activities nor an activity of outstanding quality. Either of the two factors are necessary to provide for an outstanding opportunity for recreation. The IBLA has ruled that the record supports BLM's conclusion that the unit lacks outstanding opportunities for primitive and unconfined recreation.

13. *Comment:* BLM documents (technical reports) indicate that the area containing outstanding solitude amounts to only 1,000 acres (0.75 percent), not the 10 percent indicated in the SSA. The SSA offers no basis for the 10-percent conclusion, and no additional field investigations were done during the study phase.

Response: The WSA's opportunities for solitude were reevaluated during the study phase and size was considered to have a greater influence on solitude. It was concluded during this reevaluation that 10 percent of the WSA has outstanding opportunities for solitude.

14. *Comment:* The SSA repeatedly notes the beauty of the Rim Rocks area but excludes it from the recommendation.

Response: The Rim Rocks area is included in the Partial Wilderness Alternative that was preliminarily recommended as suitable.

15. *Comment:* Data presented in the preliminary SSA is contradictory and inadequate (i.e., no page numbers, omission of referenced Table 1, omission of several needed maps, no mention of the fact that 1,400-year-old juniper trees are located in a proposed land treatment area).

Response: Data lacking in the preliminary

SSA (i.e., page numbers, omission of referenced tables) have been corrected in this EIS. The 1,400-year-old juniper trees are not within the proposed land treatment area.

16. *Comment:* The SSA does not mention the importance of wilderness designation in preventing surface disturbances that add to sediment and salinity yields.

Response: Surface disturbance could occur from mining claim assessment work and development if a valid existing right exists. Also, oil and gas exploration and development could continue subject to stipulations attached at the time of leasing. The effects of wilderness designation on surface disturbance are described in the Environmental Consequences, All Wilderness Alternative section.

17. *Comment:* The SSA does not mention that the sediment and salinity resulting from coal development would add to the Colorado River.

Response: Sediment and salinity resulting from surface disturbance is explained in the Soils section of the Environmental Consequences, No Action Alternative. Valid existing rights to coal development would not be affected by wilderness designation.

18. *Comment:* The SSA contains inconsistencies in references as to the quality of wilderness values.

Response: The inconsistencies or references to the quality of wilderness values are removed in the rewrite of this document.

19. *Comment:* The SSA is inconsistent in the discussion of the importance of ORV conflicts.

Response: ORV activities are discussed in the Affected Environment, Livestock and Recreation sections and conflicts are addressed in the Environmental Consequences section.

20. *Comment:* There is an arbitrary and unexplained conclusion that scenic and scientific values are limited to 7,600 acres in the SSA.

Response: Scientific values refer to the 1,000-acre Four Mile Bench Old Tree Area. Scenic values refer to the 7,000 acres in lower Wahweap and Coyote Creek that possess a

colorful mix of white Dakota Sandstone and the red Entrada Formation. The 4,700-acre Cads Crotch portion of the East Kaibab monocline possesses scenic values. Scenic values are also present in the upper Coyote Canyon and mid and upper portions of the Wahweap Canyon system.

21. *Comment:* There is a lack of data in the SSA providing "an adequate basis for projecting site density or significance" of cultural resources.

Response: No formal archaeological inventory has been conducted within the Wahweap WSA; therefore, no basis for a projection of the site densities or significance exists.

22. *Comment:* The SSA contains ambiguous reference to the outside sights and sounds of future coal development.

Response: If coal were developed on adjoining lands, outside sights and sounds could impair the WSA's wilderness values. BLM's "Wilderness Management Policy" (USDI, BLM, 1981a) states that no buffer zones will be created around wilderness areas to protect them from the influence of activities on adjacent land. The fact that nonwilderness activities can be seen or heard from areas within the wilderness shall not, of itself, preclude such activities up to the boundary of the wilderness area.

23. *Comment:* No discussion of the relative feasibility and importance of the extensive proposed land treatments is contained in the SSA.

Response: The relative feasibility and importance of the proposed land treatments are contained in the Paria Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981b).

24. *Comment:* Providing a buffer zone for wilderness characteristics on a portion of the WSA for manageability purposes is contrary to "Wilderness Study Policy" guidelines.

Response: Buffer zones are contrary to the "Wilderness Management Policy" and would not be established.

25. *Comment:* Why delete Cottonwood Canyon when it meets all the criteria?

Response: The portion of Cottonwood Wash east of the powerlines and road is within the WSA. Cottonwood Canyon is not within the WSA.

26. *Comment:* As for ORV conflicts, BLM has plenty of acreage elsewhere for ORV activities.

Response: ORV activities are discussed in the Affected Environment, Livestock and Recreation sections. Livestock operators, mineral development interests, and hunters make some ORV use of the area. This analysis only evaluates ORV activities within the WSA.

27. *Comment:* The Draft SSA claims that only 10 percent of the 134,000-acre complex of canyons, benches, cliffs, and badlands offers outstanding solitude and none offers outstanding primitive recreation. This is absurd and must be explained.

Response: IBLA has ruled that no outstanding opportunities for primitive and unconfined recreation exist within the WSA. Upon remand from IBLA, the reassessment decision concluded that outstanding opportunities for solitude were not present in the canyons, benches, and cliffs and were present in the Dakota Sandstone Formation area. The inventory decision was not appealed by the original appellants and is final. No badlands are present in the WSA.

28. *Comment:* Outstanding opportunities are the norm in this WSA (hike it, fly it, or look at a map) and SSA claims to the contrary jeopardized the wilderness review process.

Response: The inventory phase of the wilderness review process was closely examined by IBLA. Fourteen appellants and four interveners and amici curiae participated in the IBLA decision. The IBLA review of this unit has enhanced, rather than jeopardized, the review process.

29. *Comment:* In the SSA, BLM should define the boundaries of the area containing wilderness characteristics as defined during the inventory and not as altered by new evidence.

Response: The SSA and this EIS are in draft form. One of the purposes of issuing a draft for public comment is to obtain new information so the document can be improved.

30. *Comment:* The oil and gas (mineral) potential of the WSA is ranked moderate by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be at least moderate to high.

This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

31. *Comment:* BLM's concern for natural sediment and salinity seems hollow because this agency often allows coal development that would result in increased sediment, salinity, water contamination from mines, acid rain, and "people pollution."

Response: The BLM is concerned over sediment and salinity produced from administered lands. However, recommendations as to an area's suitability or unsuitability for wilderness designation will reflect a thorough consideration of any identified or potential energy resource values present in the area. This standard reflects the mandates given to the Department of the Interior and the BLM by the President and Congress that all BLM programs be geared towards meeting the national goal of decreasing balance on foreign production through increased domestic energy production.

32. *Comment:* There are potential conflicts with water resource issues related to livestock grazing, wildlife, and erosion control. The EIS needs to evaluate these issues.

Response: The purpose of this EIS is to evaluate various proposals for wilderness designation. The affects of the activities mentioned above are analyzed in this EIS. Refer to the *Kanab-Escalante Grazing Management EIS* (USDI, BLM, 1980a) for a more detailed description of the impacts of livestock grazing in this area.

33. *Comment:* Would coal resources and development have an effect on wilderness designation?

Response: The interactions of coal development and wilderness values are described in the Environmental Consequences section.

34. *Comment:* When assessing the mineral potential of a WSA, the feasibility of extract-

ing the mineral commodity must be addressed (i.e., quality, quantity, market).

Response: The assessment of mineral potential involves both the identification of the occurrence of energy and mineral resources by type and the use of these identified energy and mineral resources. Both of these standards will be considered by BLM prior to making final recommendations for wilderness suitability.

35. *Comment:* The existence of supplemental values (special features) does not justify recommending an area (70,380 acres) disproportionately larger than that possessing mandatory characteristics (1,000 acres).

Response: During EIS scoping, BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (including Special Features) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

36. *Comment:* The Draft SSA recommendation compromises legitimate mineral rights to protect an area possessing the mandatory characteristics but which is smaller than the statutory minimum area.

Response: The IBLA ruled that "During reassessment BLM should consider OAD 78-61, Change 3 at page 3, which states that "a unit is not to be disqualified on the bases that an outstanding opportunity exists only in a portion of the unit. Each individual acre of land does not have to meet the outstanding opportunity criterion." It is BLM policy that designation of an area as wilderness may not be the basis for denying a mineral lease, permit, or

license. Regulations imposed on existing lessees, permittees, or licensees must be reasonable and consistent with the continued use of the lands for the purposes for which the leases were issued.

37. *Comment:* The EIS should discuss land use conflicts as a result of wilderness designation.

Response: The impact of wilderness designation is discussed in the Environmental Consequences, All Wilderness Alternative section.

38. *Comment:* Would wilderness designation be consistent with local and State land use planning?

Response: Wilderness designation would not be consistent with the *Kane County Master Plan* (Kane County Board of Commissioners, 1982) or with the State Land Board's policy of generating revenue from State lands. Refer to Land Use Plans and Controls, All Wilderness Alternative, Environmental Consequences section.

39. *Comment:* The EIS should discuss boundary adjustments as they might affect wilderness manageability.

Response: The impacts on wilderness values for each alternative are discussed in this EIS. A Partial Wilderness Alternative rather than a boundary adjustment has been analyzed that has different impacts on wilderness values and manageability.

40. *Comment:* Cost/benefit analyses are needed to identify wilderness economic tradeoffs.

Response: BLM does not believe that a cost/benefit analysis, or any other comparison based solely on economic considerations, can properly portray tradeoffs involved. This is because: (1) many of the values related to wilderness are intangible; (2) market conditions that affect consumptive resources are highly variable over time; (3) the wilderness study criteria do not lend themselves to cost/benefit interpretations; and (4) the numerous and divergent factors that contribute to wilderness considerations would make a meaningful cost/benefit analysis very difficult, if not impossible. BLM believes that it can serve best by narrating the situation and offering a recommendation that can be pursued by the legislative branch.

41. *Comment:* Manageability should be de-emphasized as a criterion for denying designation. Just because management could be difficult (e.g., ORV control) does not mean it could not be accomplished by some means (fences, ranges, etc.).

Response: Rationale for suitability recommendations will be keyed to the criteria of the "Wilderness Study Policy" and to other resource management factors as described in Chapter 2, Volume I of this EIS.

42. *Comment:* The unqualified representation in the introductory pamphlet misrepresents the extent of preservable wilderness characteristics in the WSA and inflates its importance for designation. It is as though Cedar City does not want to consider Wahweap and never has.

Response: During the original inventory process, BLM found the area lacking outstanding opportunities for solitude or for primitive and unconfined recreation. This decision was appealed to IBLA. The IBLA ruled that the record supports BLM's conclusion concerning recreation. IBLA ruled that reassessment might result in a changed determination when BLM considered the interrelationship of size, screening, configuration, and other factors that influence solitude. During the reassessment, the BLM determined that the inventory unit did have outstanding opportunities for solitude which qualified it as a WSA.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

During scoping, it was suggested that a new partial alternative be studied to avoid about 4,500 acres of coal lands. Some of the area referenced in the suggestion is outside of the WSA. That portion within the WSA has been determined to be marginal for coal recovery (Doelling and Graham, 1972). The analysis of the existing Partial Wilderness Alternative covers the major aspects of the coal potential; therefore, the suggested second partial alternative was not included for detailed study.

Also during scoping it was suggested that an alternative be prepared to include Cottonwood Canyon and Rim Rocks, but to exclude Coyote Creek. Cottonwood Canyon and Rim Rocks are not within the boundaries of the WSA as determined by the inventory phase of the wilderness study process. Intrusions in Coyote Creek are noted in the analysis; therefore, a new partial alternative would not add to the information presented in this aspect.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (134,400 acres); and (3) Partial Wilderness (70,380 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 134,400-acre Wahweap WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Paria Planning Unit MFP (USDI, BLM, 1981b) and other BLM planning documents. The State land within and adjacent to the WSA (refer to Map 1) has not been identified for special Federal acquisition through exchange or purchase; therefore, State lands are analyzed as remaining under State ownership. No private or split estate lands are located within the WSA.

The following are specific actions that would take place under this alternative:

- All 134,400 acres would remain open to mineral location, leasing with standard and special stipulations, and sale. Development work, extraction, and patenting would be allowed on 21 existing mining claims (about 420 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 Code of Federal Regulations [CFR] 3809). One hundred fifty-two (152) existing oil and gas leases (98,376 acres) and future leases could be developed under leasing Category 1 (standard stipulations) on 127,220 acres. About 6,480 acres would be managed as oil and gas leasing Category 3 (no surface occupancy)

and 700 acres as Category 4 (closed to leasing). Coal leasing and development, including 18 existing leases, could occur without regard for wilderness values.

- The present level of domestic livestock grazing use of the 134,400-acre WSA would continue as authorized in the MFP (3,027 Animal Unit Months [AUMs]). The existing rangeland facilities (18 miles of fence, 13 reservoirs, 0.5 mile of pipeline, a 30-foot ring tank, and a 66,000-gallon storage tank) could be maintained in a routine manner, with motorized equipment if needed. New rangeland developments could be implemented without wilderness considerations. Planned new developments include 4 miles of fence, four reservoirs, 6 miles of pipeline with troughs, three spring projects, three water catchments, and 3 miles of trail. About 9,800 acres of vegetation treatment would be for livestock.
- Developments for wildlife, watershed, water resources, etc., would be allowed without concern for wilderness values if in conformance with the MFP. Planned developments for wildlife include 40,300 acres of vegetation treatment (chaining of pinyon-juniper and spraying of sagebrush) and construction of 13 watering facilities. Planned watershed improvements include 9,400 acres of watershed tillage. The planned livestock, wildlife, and watershed treatments overlap, and overall vegetation treatments are planned for 43,100 acres. It is unlikely that this magnitude of treatment would ever be achieved.
- Approximately 122,700 acres, including about 40 miles of way in approximately 25 locations, would be designated as open to ORV use. On 8,400 acres, ORV use would be limited to existing roads and trails. This area is located along Wahweap Creek, Tommy Canyon, Fourmile Creek, and Nipple Creek. An additional 3,300 acres would be closed to vehicle use from March 1 to July 1 of each year near the lower reaches of Wahweap Creek to protect wildlife values. New access in or along the boundary of the WSA could be developed without wilderness considerations. The unit contains portions of five identified transportation corridors that encompass approximately 92,000 acres. A portion of one or

more of these corridors may become a right-of-way for coal transportation.

- The entire 134,400-acre area would continue to be potentially open to woodland product harvest. There is minimal harvest of forest products at the present time, and no increase is planned due to remoteness and lack of demand.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (6,000 acres), Class III (4,300 acres), and Class IV (124,100 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

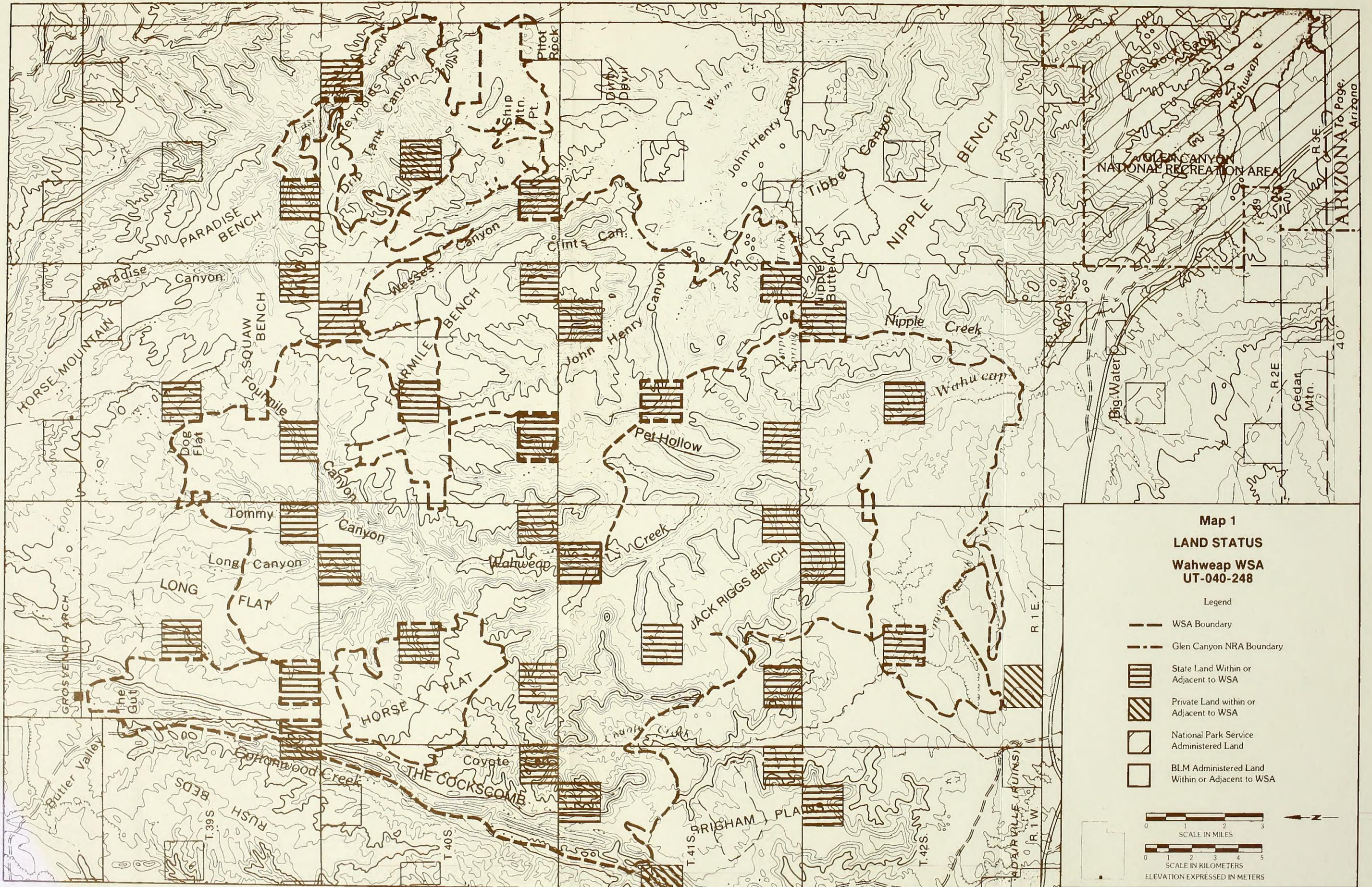
ALL WILDERNESS ALTERNATIVE

Under this alternative, all 134,400 acres of the Wahweap WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" to preserve its wilderness character. Upon designation, exchange of 16 sections (9,766 acres) of State land within the WSA (refer to Map 1) is likely. (Refer to Appendix 3 for further information regarding State in-holdings.) Additionally, the State has identified twelve other sections (7,680 acres) adjacent to the WSA that would be logical for exchange. Four other State sections and private lands in two locations adjacent to the WSA likely would not be acquired by purchase or exchange. Should land transfers be made, it is assumed that

management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

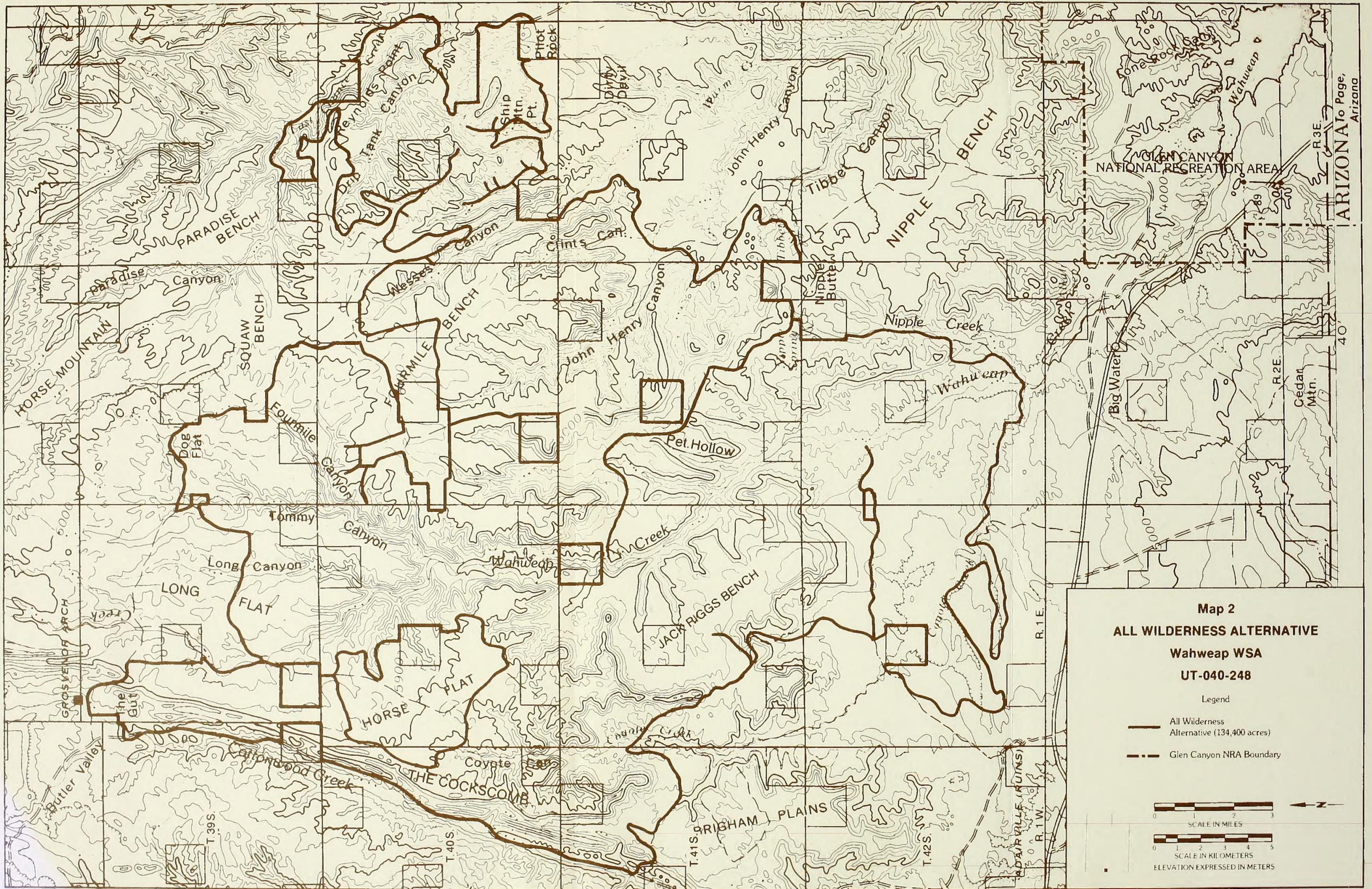
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 134,400 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 420 acres of 21 existing mining claims and on any future claims located prior to wilderness designation that may be determined valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with concern for wilderness values. Existing oil and gas leases involving 98,376 acres would not be reissued upon expiration unless a find of oil or gas resources in commercial quantities is shown. New oil and gas leases would not be issued.
- Present domestic livestock grazing would be allowed to continue as authorized in the Paria MFP. The 3,027 AUMs in the WSA would remain available to livestock as presently allotted. After designation, existing rangeland developments as listed in the No Action Alternative could be maintained in a manner least degrading to wilderness values. New rangeland developments (4 miles of fence, 6 miles of pipeline with troughs, three spring projects, three water catchments, and 3 miles of trail) would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that wilderness protection standards are met (refer to Appendix 1). It is assumed that the proposed four reservoirs and 9,800 acres of vegetation treatment would not be allowed.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions



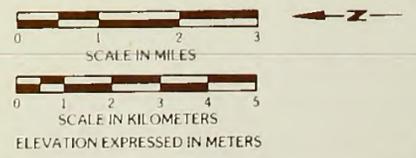


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Map 2
ALL WILDERNESS ALTERNATIVE
Wahweap WSA
UT-040-248

- Legend
-  All Wilderness Alternative (134,400 acres)
 -  Glen Canyon NRA Boundary



presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities, except those noted for livestock and wildlife, are presently planned. The proposed 9,400 acres of land treatment for watershed would not be allowed.

- Wildlife transplants and developments (none now exist) would be allowed as long as criteria (refer to Appendix 1) are met to adequately protect wilderness values. It is assumed that the proposed 13 wildlife watering facilities would be allowed, but that the proposed 40,300 acres of vegetation treatment for wildlife would not be allowed.
- The entire 134,400-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions. About 40 miles of existing vehicular ways would not be available for vehicular use except as indicated above. The following roads (totaling 25 miles) would be "cherry-stemmed" and remain open to vehicular use: (1) Horse Flat Road (also includes added land area as a "cherry-stemmed" island), 6 miles; (2) south side of Fourmile Canyon (two short roads), 1 mile; (3) on bench southwest of Drip Tank Canyon, 1.5 miles; (4) Ship Mountain Point, 1 mile; (5) west of Ship Mountain Point, 2 miles; (6) from Nipple Butte to Wahweap Creek, 12 miles; (7) south of Jack Riggs Bench, 6 miles; and (8) Jack Riggs Bench, 1.5 miles. About 45 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel. Future use of potential utility and transportation corridors through the 134,400-acre wilderness area would not be allowed. New road construction would not be allowed.
- A specific Wilderness Management Plan would be developed that would govern use and protection of the 134,400-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed for roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources on 134,400 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the 134,400-acre area would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources in the 134,400-acre wilderness area would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals, while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE

(PROPOSED ACTION)

Under this alternative, 70,380 acres of the Wahweap WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness the part of the WSA with the highest wilderness values, as well as to minimize conflict with areas of greatest mineral (coal) development potential and avoid part of the conflict with proposed vegetation treatments. The Partial Wilderness Alternative essentially includes Wahweap Creek and the area west thereof. However, it also includes the major canyons that drain into Wahweap Creek from the east, including Ty Hatch, Smith Run, Tommy Canyon, Long Flat Canyon, Fourmile Canyon, and Tommy Smith Creeks. It also includes the majority of the Cockscomb Formation near the western boundary.

The 64,020 acres within the north and northeast part of the WSA, but outside of that designated as wilderness, would be managed in accordance with the Paria MFP as described for the No Action Alternative. The 70,380-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative.

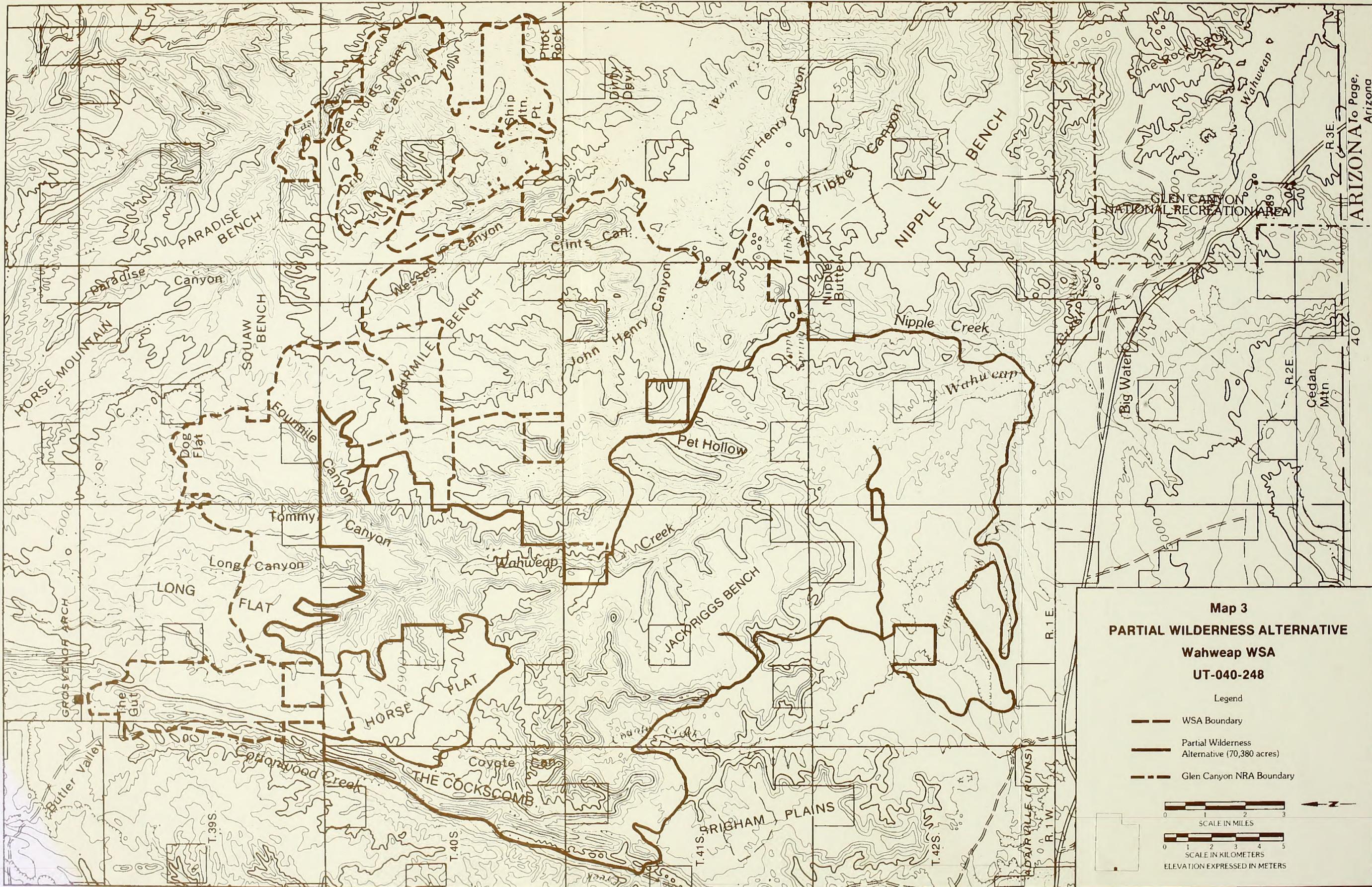
Six State sections (5,191.60 acres) within the WSA likely would be exchanged under the Partial Wilderness Alternative. In addition, the State has identified 1,964 acres in three other sections adjacent to this alternative that would be logical for exchange. It is assumed that these two sections would be exchanged, resulting in a total of 7,156 acres of State land involved with this alternative. Assumptions regarding analysis and impacts for State lands involved in the Partial Wilderness Alternative are the same as described for the All Wilderness Alternative. (Refer to Appendix 3 for further information regarding State in-holdings.) Other State and private lands adjacent to the WSA likely would not be acquired by BLM. The figures and acreages under this alternative are for Federal lands only.

A summary of specific actions follows:

- The 70,380-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 70,380-acre area, development work, extraction, and patenting would be allowed to continue on nine existing mining claims (180 acres) and any future claims located prior to wilderness designation, provided they

are valid. The existing oil and gas leases covering 32,934 acres in the 70,380-acre wilderness would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown. The 64,020-acre area within the WSA not designated wilderness would be open to future mineral location, leasing, and sale. The area not designated would be managed as oil and gas leasing Category 1 (standard stipulations) on 62,670 acres and Category 3 (no surface occupancy) on 1,350 acres. In the 64,020-acre area, mining would be allowed on 12 existing claims and future claims if valid. Development of such claims would be regulated by unnecessary or undue degradation criteria (43 CFR 3809) without wilderness consideration.

- Domestic livestock grazing would continue to occur in the 70,380-acre wilderness area. The 1,574 AUMs in the 70,380-acre area would remain available to livestock as presently allotted. New rangeland development (5 miles of pipeline, 4 miles of fence, two spring developments, and three catchments) could be allowed in the wilderness area if necessary for protection and management of the rangeland and/or wilderness resource, provided that wilderness protection standards are met. The 8,800 acres of vegetation treatment for livestock would not be allowed. In the 64,020-acre nonwilderness area, grazing use of 1,453 AUMS would occur and new rangeland developments (1 mile of pipeline, four reservoirs, one spring development, 3 miles of trail, and 1,000 acres of land treatment) could be allowed in this area without concern for wilderness values.
- In the 70,380-acre wilderness, new water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed only if enhancing to wilderness, if necessary to correct conditions that are imminently hazardous to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. Approximately 8,800 acres of the proposed land treatment would not be allowed. In the remaining 64,020-acre area, water resource facility developments would be allowed without concern for wilderness values if in accordance with the MFP. The proposed 800 acres of land treatment would be allowed.



Map 3
PARTIAL WILDERNESS ALTERNATIVE
Wahweap WSA
UT-040-248

Legend

- WSA Boundary
- Partial Wilderness Alternative (70,380 acres)
- · - · - Glen Canyon NRA Boundary

0 1 2 3
SCALE IN MILES

0 1 2 3 4 5
SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS

- In the 70,380-acre wilderness, wildlife transplants or habitat improvements would be allowed only if they are compatible with wilderness values. About 23,950 acres of the proposed vegetation treatment for wildlife would not be allowed. In the remaining 64,020-acre area, wildlife transplants or improvements would be allowed without concern for wilderness values. About 16,350 acres of vegetation treatment would be allowed in this area.
- The canyons and benches that would comprise the 70,380-acre wilderness would be closed to ORV use. About 10 miles of existing ways in the wilderness area would not be available for vehicular use except in situations described under the All Wilderness Alternative. Three existing roads (totaling 8 miles) would be "cherry-stemmed" as follows: (1) south side of Fourmile Canyon (one short road), 0.5 mile; (2) south of Jack Riggs Bench, 6 miles; and (3) Jack Riggs Bench, 1.5 miles. The 64,020-acre remainder of the unit would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed that would govern use and protection of the 70,380-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or dead-end at the border of the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products in the 70,380-acre wilderness would not be allowed except for harvest of pine nuts or non-commercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining 64,020 acres would be open to woodland harvest, although none is planned.
- Visual resources on the 70,380-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 64,020 acres would be managed as Class II (4,600 acres), Class III (3,500 acres), and Class IV (55,920 acres).
- Within the 70,380-acre wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques. In the 64,020-acre nonwilderness area, measures of control would be taken without wilderness considerations.
- In the 64,020-acre nonwilderness area, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the 70,380-acre wilderness, such activity would be allowed by permit provided it was accomplished in a manner compatible with wilderness preservation. Information gathering would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the 64,020-acre area, hunting would be allowed subject to applicable State and Federal laws and regulations. In the 70,380-acre wilderness, hunting would be allowed subject to applicable laws and regulations, but use would be limited to nonmotorized means.
- In the 64,020-acre area, control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the 70,380-acre wilderness, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 presents the main environmental consequences resulting from implementation of the alternatives. Only those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

Measurements of air pollution or visibility levels made at Four Mile Bench indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

The area is presently classified as Class II air under the Prevention of Significant Deterioration (PSD) regulations as outlined by the Clean Air Act as amended in 1977. The BLM will not consider nor recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of the BLM (USDI, BLM, 1982b). Visibility within the WSA is excellent.

Geology

The Wahweap WSA is in the Canyonlands section of the Colorado Plateau Physiographic Province. The unit lies within the western portion of the Kaiparowits Plateau. The WSA is a typical example of the landforms of this section, characterized by plateaus and benches dissected by canyon systems draining to the Colorado River.

The general topography of the WSA is that of a slightly tilted staircase, with south-facing escarpments and gently northward-sloping benches. Each bench slopes to the north to the base of the next escarpment or stair-step. Imprinted on this generalized topographic form for the unit are the southward-draining canyons and tributaries of Coyote, Wahweap, Warm Creek, and Last Chance Creeks. The double ridge system along the western edge of the unit is a portion of The Cockscomb, a major topographic feature in south-central Utah.

The lowest elevation in the unit is located at the confluence of Coyote Creek and Wahweap Creek

(4,040 feet). The highest elevations are found on The Cockscomb near The Gut (6,742 feet), Ship Mountain Point (6,519 feet), and the south end of Horse Flat (6,433 feet).

Jurassic to Cretaceous strata are exposed in the WSA. Jurassic strata, consisting of the Carmel and Entrada Formations, are exposed in only a limited area in the extreme southernmost part of the WSA. The Cretaceous units include the Dakota, Tropic, Straight Cliffs, Wahweap, and Kaiparowits Formations. The Straight Cliffs and Wahweap Formations form the most extensive exposures in the unit. The Dakota and Straight Cliffs are coal-bearing. However, only the Straight Cliffs Formation is an important coal bearer in the unit.

The subsurface structure beneath the WSA consists of abundant north-south trending folds. Perhaps the most prominent structure is the steeply dipping East Kaibab monocline. The Straight Cliffs and Dakota Formations are involved in the folding of the East Kaibab monocline. The dips are eastward, usually 25 to 80 degrees. The bottom of the monocline forms the trough of the Kaiparowits syncline to the east. The exact axial trace of this syncline is unclear because of little control data for the area. The monocline, or Cockscomb, as it is often called, is unique as a Colorado Plateau structure. Its alignment with the Paunsaugunt, Sevier, and Hurricane faults suggests that it too could be a fault at depth. It extends from the Colorado River north beyond Canaan Peak, trending north-northeast. The strike valleys along The Cockscomb are flanked on both sides by sharp hogbacks of competent sandstone. Faults occurring along the monocline suggest severe bending of the rocks. Some of the beds are overturned. Near the axis of the Kaiparowits syncline, about 7 miles east of The Cockscomb, the monocline has dipped 5,000 structural feet into a basin.

The Echo monocline has beds that dip about 7 to 8 degrees in an easterly direction along the trend of the monocline, then straighten out and flatten at the Wahweap syncline 1.25 to 3 miles to the east. Both of these structural axes plunge northward and die out. West of the monocline the dips are from 2 to 4 degrees and the direction shifts from east to north. The twisting of strata is reflected by echelon faults trending northwest in the southern part of the WSA. In each case the north block is downthrown and the displacement is small.

WAHWEAP WSA

TABLE 1 SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES WAHWEAP WSA

Resource	Alternatives		
	No Action	All Wilderness (134,400 Acres)	Partial Wilderness Designation (70,380 Acres) (Proposed Action)
Mineral and Energy Resources	Potential recovery could be achieved for up to 3 to 15 million barrels of oil, 18 to 90 billion cubic feet of natural gas, 500 million tons of coal, and 500 tons of uranium oxide. The probability of recovery of oil, gas and uranium is low. Coal would probably not be developed in the near future but could be in the distant future.	Oil, gas, and coal likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. With the exception of coal, the loss of potential recovery of these mineral resources would not be significant. Coal would probably not be developed in the near future but could be in the distant future.	Up to 1.5 to 7 million barrels of oil, 9 to 45 billion cubic feet of natural gas, 475 million tons of coal, and 240 tons of uranium oxide could be recovered. The probability of recovery of oil and gas and uranium is low. Coal would probably not be developed in the near future but could be in the distant future.
Wildlife	About 1.6 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. Proposed land treatments on 43,100 acres (32 percent of the WSA) and 13 wildlife watering facilities would benefit wildlife.	Wildlife would benefit from solitude. Any benefits from land treatments would be foregone. The 13 proposed watering facilities would probably be allowed.	Wildlife in the designated area would benefit from solitude. About 3 percent of the nondesignated portion could be disturbed by mineral and energy exploration and development, which could adversely affect wildlife habitat. Ninety-eight percent of the land treatment and associated wildlife benefits would be foregone.
Livestock	Grazing of 3,027 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of three spring developments, four reservoirs, three catchments, 4 miles of fence, 6 miles of pipeline, 3 miles of trail, and 9,800 acres of land treatments could be implemented. About 1,600 additional AUMs of forage could be produced annually and livestock distribution improved.	Grazing of 3,027 AUMs and maintenance of existing developments would continue. Proposed new developments might not be allowed. Additional forage that could be created through vegetation treatments would be lost and livestock distribution would remain as at present.	Grazing of 3,027 AUMs and maintenance of existing developments would continue. One proposed spring development, four reservoirs, 1 mile of pipeline, 3 miles of trails, and 1,000 acres of land treatment would be in the nondesignated portion and could be allowed. Livestock distribution would improve on 48 percent of the WSA. An additional 160 AUMs could be produced annually.
Visual Resources	The quality of visual resources could be impaired on up to 45,230 acres.	Visual quality could be impaired on up to 20 acres.	Visual quality could be impaired on 19,900 acres, including 10 acres in the designated portion. All of the Class A scenery would be within the designated portion and would be protected by the reduced potential for disturbance.

**TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
WAHWEAP WSA**

Resource	Alternatives		
	No Action	All Wilderness (134,400 Acres)	Partial Wilderness Designation (70,380 Acres) (Proposed Action)
Recreation	ORV use of 40 miles of ways would continue at current low levels. Overall recreational use could increase from the present 100 visitor days per year to 150 over the next 20 years. Up to 45,230 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 40 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV recreational use could continue on 30 miles of way in the undesignated portion. The quality of the primitive recreational experience would be reduced on about 48 percent of the WSA.
Wilderness Values	Wilderness values could be lost on up to 45,230 acres (34 percent of the WSA), but the values in the rest of the WSA would not be affected. None of the WSA has outstanding opportunity for primitive or unconfined recreation.	Wilderness values would be protected, except on up to 20 acres (less than 1 percent of the WSA) which may be disturbed by development of valid mineral rights.	On the designated portion, wilderness values would be protected, except on 10 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on one-third of the 64,020 acres not designated. Overall, wilderness values could be lost on 15 percent of the WSA. However, all of the area meeting the standards for outstanding opportunities for solitude and 52 percent of the area meeting the standards for naturalness would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Kane County Master Plan</i> , State of Utah plans and policies, proposals for five coal transportation corridors in the area, and the BLM Paria MFP.	This alternative would not be consistent with Kane County's concept of multiple use or possible transportation corridors in the area. It would be consistent with State policy if lands were exchanged. Designation would constitute an amendment of the BLM Paria MFP.	Partial designation would be the same as the All Wilderness Alternative, except that the portion not designated would be consistent with Kane County's plans and possible transportation corridors.
Socio-economics	Annual local sales of less than \$63,050 and Federal revenues of up to \$355,871 would continue. An additional \$158,142 per year in Federal revenues plus royalties and bonus bids could be derived from leasing of presently unleased areas. Production of 1,600 additional AUMs annually could increase Federal revenues by \$2,240 per year and livestock sales by \$32,000 per year.	Annual local sales of less than \$63,050 and Federal revenues of up to \$4,328 would continue, but Federal revenues of up to \$512,015 plus royalties and bonus bids from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA. Economic benefits of increased livestock forage production would be lost.	The effects of this alternative would be the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$193,896. Livestock forage could be increased by 160 AUMs annually to produce an additional \$224 per year in Federal revenues and \$3,200 per year in livestock sales.

A small anticline flanked by synclines occurs at Nipple Bench in the southeast part of the WSA. The Nipple Bench anticline with the Warm Creek syncline to the east and the Wahweap syncline to the west plunges north into the central Kaiparowits basin, with dips rarely exceeding 2 degrees.

Paralleling Reynolds Point is the Last Chance syncline with dips to the northeast from 2 to 5 degrees. Dips between the syncline and the Smoky Mountain anticline are locally 10 degrees.

Local unconformities are numerous owing to the intertonguing characteristics of the Cretaceous rocks. Continuous major unconformities exist between important stratigraphic divisions. A major angular unconformity occurs at the top of the Jurassic. The Dakota Sandstone, first of the Cretaceous strata, lies unconformably on this erosion surface. The angularity of the unconformity ranges from 0 to 1 degrees. A second major unconformity, reported by SAI (1982), occurs between the Smoky Hollow and John Henry Members of the Straight Cliffs Formation. The angularity is slight, less than 1 degree regionally, but as high as 7 degrees where fluvial channels cut into the erosional surfaces.

Soils

Approximately 47 percent of the WSA consists of moderately coarse and medium-textured, very shallow to deep, and nearly level to moderately rolling soils on benches. Included in these soils are scattered areas of rock outcrop. About 40 percent are badland and rock outcrops on canyon walls, breaks, terraces, and valleys. About 6 percent of the WSA consists of badlands and medium, moderately fine and fine textured, very shallow to moderately deep and undulating soils. About 7 percent is moderately coarse, medium, and moderately fine-textured, very shallow to deep, and nearly level to moderately rolling soils on fans, terraces, and floodplains.

The soils are, for the most part, moderately to severely susceptible to erosion. Some are slightly susceptible. The rock outcrop and badland areas have natural erosion problems and have medium to high sediment and salt yields. Table 2 identifies the erosion conditions within the WSA.

The MFP has identified 9,400 acres of watershed tillage land treatment within the WSA to mitigate erosion problems.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	9,400	7	25,380
Moderate	1.3	102,000	76	132,380
Slight	0.6	23,000	17	13,800
Stable	0.3	0	0	0
Total		134,400	100	171,780

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

Existing vegetation in the WSA is composed primarily of three major vegetation associations (pinyon-juniper, shadscale, and other desert shrubs) with very small amounts of three other types (short grass, big sagebrush, and mid grass).

The pinyon-juniper type covers approximately 73 percent (98,112 acres) of the WSA and has a sparse understory of shrubs, including mountain mahogany, serviceberry, cliffrose, and silver buffalo berry. The shadscale type occurs on about 12 percent (16,128 acres) of the area while the other desert shrub type includes primarily species of *Ephedra* and *Grayia* and presence of sensitive plant species occupies approximately 8 percent (10,752 acres) of the unit. Big sagebrush types occur on 3 percent (4,032 acres), the short grass type makes up 1 percent (1,344 acres), and 1 percent (1,344 acres) consists of a mid-grass type. Small riparian zones occur in Wahweap and Tommy Smith Creeks and Fourmile and Long Canyons. The remaining 2 percent (2,688 acres) of the unit is barren.

Cymopterus higginsii, a candidate species under review by the Fish and Wildlife Service for threatened or endangered status, is found within or near this WSA.

The Wahweap WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are juniper-pinyon woodland and saltbush-greasewood. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual

vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

There are no perennial streams in the WSA. Four creeks within the unit, however, have water at intermittent portions of their length; these include Wahweap, Tommy Smith, Fourmile Canyon, and Long Canyon Creeks. A number of other drainages in the unit are dry and include the following: Coyote, Ty Hatch, Smith Run, Tommy Canyon, Long Flat Canyon, Wesses Canyon, Clints Canyon, Drip Tank Canyon, and John Henry Canyon Creeks. There are 24 undeveloped springs and 13 livestock reservoirs, .5 miles of pipeline, a 30-foot ring tank, and a 66,000-gallon water storage tank in the WSA. Proposed within the WSA are 16 water catchments, 6 miles of pipeline with troughs, four livestock reservoirs, and development of three of the 24 springs.

Wahweap Creek, the primary drainage in the WSA, is a source of nonpoint salinity and sediment to the Colorado River. The reduction of the Colorado's sediment and salinity is of national importance due to treaty obligations with Mexico. The Bureau of Reclamation, the agency responsible for reducing Colorado River sediment and salinity, has yet to evaluate the Wahweap Creek drainage for possible control measures.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of -3 was assigned to the Wahweap WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation

report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The energy and mineral resource rating summary is given in Table 3.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency, but not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of titanium that is currently listed as a strategic and critical material (Federal Emergency Management Agency, 1983).

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f3	c2	10 to 50 million barrels of oil; 60 to 300 million cubic feet of gas
Uranium	f2	c3	Less than 500 tons of uranium oxide
Coal	f4	c4	1 billion tons
Geothermal	f1	c1	None
Titanium	f2	c1	Unknown

Source: SAI, 1982.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

The only oil and gas production in south-central Utah in the vicinity of the WSA comes from the Upper Valley Field located approximately 10 miles to the north. This field was discovered on the Upper Valley anticline in 1964 and stimulated drilling activity on similar anticlinal structures in south-central Utah. To date, however, no commercial oil and gas potential has been identified in

south-central Utah outside the Upper Valley Field.

No oil and gas wells have been drilled within the WSA. Two wells have been drilled nearby, one about 2 miles to the northwest and another about 8 miles to the southwest. The well to the northwest tested an anticlinal structure that does not affect the WSA. The well to the southwest tested the western edge of the prominent Kaibab monocline and penetrated Cambrian rocks at a total depth of 6,253 feet. No oil shows were reported from this well (Campbell, 1958; Kunkel, 1965).

The stratigraphic and structural setting of the WSA closely resembles the area of the Upper Valley Field. Although numerous north-south trending folds occur across the tract, none represent a structure nearly as significant as the Upper Valley anticline. However, because of the proximity of the Upper Valley Field, the WSA has been assigned an oil and gas rating of f3/c2 (i.e., favorable for small oil and gas fields [10 to 50 million barrels oil] but with a low certainty of occurrence).

Under the current land use plan, 700 acres within the WSA are closed or suspended to oil and gas leasing, and 6,480 acres are open to leasing but closed to surface occupancy. These restrictions on oil and gas activities are intended to protect important scenic resources along The Cockscomb. A total of 127,220 acres within the WSA are open to oil and gas leasing subject to the standard use and wilderness stipulations.

There are presently 152 oil and gas leases covering 98,376 acres. Of these, 65 leases representing 53,156 acres are pre-FLPMA. The remainder were leased after October 21, 1976. A total of 36,024 acres remain unleased.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require re-

stricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981a). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA leases.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Coal

The WSA lies in the southern part of the Kaiparowits Coal Field, and most of the WSA is underlain by the coal-bearing Cretaceous Straight Cliffs Formation. Other minor coal-bearing rocks occur in the Dakota Sandstone in the southwestern part of the WSA. Coal in the Dakota Sandstone is only locally thick and is not considered to be minable (Doelling and Graham, 1972).

Estimated coal reserves within the entire Kaiparowits Coal Field total 15.2 billion tons (Doelling and Graham, 1972). A total of 36,225 acres containing an estimated 1 billion tons of minable coal (based on coal seams greater than 4 feet thick) occur within the northeast part of the WSA. An estimated 170 million tons occur at depths less than 1,000 feet, 504 million tons occur between 1,000 feet and 2,000 feet, and 326 million tons occur between 2,000 and 3,000 feet (Doelling and Graham, 1972). Approximately one-third to one-half of the coal is recoverable. An analysis made at the single available surface outcrop measured in Section 7, Township 41 South, Range 4 East (Alvey zone), shows an ash content of 5.03 percent, heat value of 10,230 British thermal units (Btus) per lb., and 0.78-percent sulfur (Doelling and Graham, 1972). Based on the above discussion, the minable coal in the WSA is assigned a coal favorability rating of high (f4) and a certainty of occurrence rating of high (c4).

The WSA is within the Kaiparowits Known Recoverable Coal Resource Area (KRCRA), which includes the minable coal area. In accordance with the underground mining exemption from the unsuitability criteria (43 CFR 3401.2[a]), none of the areas in the KRCRA within the WSA were determined to be unsuitable for mining as a result of the application of the unsuitability criteria (USDI, BLM, 1981b).

There are presently 18 coal leases covering 18,835 acres (approximately 12 percent of the WSA and 52 percent of the area containing minable coal). These leases were issued prior to October 21, 1976. Within the WSA 17,390 acres of the minable coal area remain unleased. The leased area is estimated to contain about 607 million tons of minable coal, or about 60 percent of the minable coal in the WSA. The unleased acreage is estimated to contain about 393 million tons of minable coal, or about 40 percent of the minable coal in the WSA.

Any development would probably be by underground methods. It is difficult to determine the specific areas where actual coal operations would occur. It is assumed that access to the coal would be from the eastern side since therein lies the shallower coal. Although vast resources of recoverable coal are indicated or inferred, much more detailed exploration will be required by drilling before large-scale mines can be planned and started. Obviously, the majority of development would be associated with existing or pending leases, since they account for over 60 percent of the coal. This would include all associated facilities. If required, developmental drilling, such as a closely spaced drilling program, could require significantly more surface area than actual mine development.

It should be noted that according to SAI (1982), development of the Kaiparowits Plateau coal will face significant economic and environmental problems. These problems include poor accessibility, lack of abundant water, high costs of underground mining, and competition from nearby areas where coal is more readily available and of better quality, particularly central Utah, northeast Arizona, and northwest New Mexico.

Geothermal

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks are known to occur within or near the vicinity of the WSA. The nearest thermal spring to the WSA is approximately 40 miles to the northeast, and it discharges at a temperature of 20 degrees Centigrade (C) (National Oceanic Atmospheric Administration, 1979).

No geothermal resources are known to occur within or near the WSA. Accordingly, the geothermal favorability of the WSA is low (f1) with a certainty of occurrence rating of low (c1).

LOCATABLE MINERALS

According to BLM mining claim records, a total of eight mining claims are currently located within the WSA. These claims consist of seven claims in Sections 23, 24, and 25, Township 42 South, Range 1 East, and one claim in Section 15, Township 40 South, Range 3 East. An additional 13 claims are currently located partially in and out of the WSA. These include 10 claims in Sections 17, 19, 20, 22, and 25, Township 42 South, Range 1 East, and three claims in Section 12, Township 39 South, Range 1 West. It is not known for which minerals these claims have been located. They were all located after June 1982.

Uranium

The Colorado Plateau is one of the major uranium-producing regions in the United States. The most important deposits occur in conglomerates, sandstones, and mudstones within the Jurassic Morrison Formation and the Triassic Chinle Formation, with minor occurrences in the Triassic Moenave Formation. By far the most productive areas of the plateaus are in northern New Mexico and southeastern Utah (SAI, 1982; Doelling, 1975). However, recent discoveries of high grade uranium have been made in the Kanab/Fredonia area of northern Arizona and southern Utah.

According to Bendix (1976), the Chinle Formation (as well as the Morrison Formation) is a relatively unfavorable host rock for uranium in the Kaiparowits Plateau region. This conclusion was based largely on the high sandstone-to-mudstone ratios and the general lack of organic matter. Bendix (1976) also points out that, although these characteristics do not preclude uranium mineralization, deposits found in similar environments nearby, such as the Henry and Carrizo Mountains, tend to be small and highly localized. Small deposits of this type are economical to extract only when exposed in outcrops or when closely grouped.

No rock units considered favorable for uranium are exposed in the WSA. The Moenave, Morrison, and Chinle Formations lie at depths ranging from less than 2,000 feet in the southwest part of the tract to over 4,000 feet in the northeastern part of the WSA. As a result, the favorability for economic deposits of uranium must be considered low (f2/c3). It is unlikely that small deposits at these depths would have any potential for development.

Titanium

Large deposits of titanium ore have not been reported in Utah, but sedimentary deposits of

titanium-bearing black sandstones, similar to those found in other western states, occur in the region. It seems likely that similar, although covered, titaniferous sandstone deposits occur sporadically in late Cretaceous rocks throughout the area. The WSA has been assigned a titanium favorability of f2. The certainty that titanium deposits occur within the tract is low and the tract has been assigned a rating of c1.

Wildlife

Due to the many different habitat types within the area, it is assumed that a diversity of vertebrate species are present. The habitat types are pinyon-juniper, sagebrush, desert shrub, grassland, riparian, and cliffs. Riparian habitat is located along segments of Wahweap Creek, Tommy Smith Creek, Fourmile Canyon, and Long Canyon.

These habitat types may support up to 52 species of mammals, 160 species of birds, 26 species of reptiles, and 8 species of amphibians. However, no inventory has been completed to determine if these species actually exist. No sport fish are located within the WSA.

Game species known to be present in the unit include mule deer, cougar, a few transplanted pronghorn antelope, cottontail rabbit, and mourning dove. No threatened or endangered species are known to inhabit the WSA. The bald eagle is a suspected winter migrant and the peregrine falcon may also occasionally use the WSA. No critical wildlife habitat has been identified in the WSA.

There are approximately 40,300 acres of land treatment for wildlife habitat improvement proposed for the WSA. These treatments consist of both pinyon-juniper chaining and seeding and sagebrush treatment and seeding. Development of 13 watering facilities is also proposed within the WSA.

Forest Resources

The forest resources in the WSA are associated with the pinyon pine and juniper that occur in the WSA. The WSA has resources suitable for firewood, posts, pine nuts, and Christmas tree cutting. However, because of the area’s remoteness and the same resources being available elsewhere, there is little demand for these forest resources at the present time.

Livestock and Wild Horses/Burros

The Wahweap WSA covers parts of the allotments shown in Table 4. As shown on Table 4, operators graze cattle within these allotments. All the allotments are under a grazing management plan except for the Wahweap Allotment. The Wahweap Allotment, however, is a winter use allotment. Consequently, all the area within the WSA is under an approved grazing system. There are 3,027 AUMs and approximately 27 fences or gap fences totaling about 18 miles within the WSA. There are also 13 livestock reservoirs, 0.5 mile of pipeline, a 30-foot ring tank, and a 66,000-gallon storage tank. Additional improvements are located on State land within the boundaries of the WSA. The present use of existing ways for livestock management is low.

The Wahweap WSA has a number of proposed range improvements recommended for development as follows: 9,800 acres of land treatment, 6 miles of pipeline with troughs, four reservoirs, three spring developments, three water catchments, approximately 3 miles of trail, and 4 miles of fence. The projects were identified to better distribute livestock grazing in the allotments.

No wild horses or burros occur within the WSA.

TABLE 4
Livestock Grazing Use Data

Allotment	Acres	Acres and Percent Within WSA	Percent of WSA	AUM Grazing Preference in WSA	Livestock Permitttees Using WSA
Last Chance	253,522	225 (1%)	1% (Less than)	5	1
Headwaters	249,246	49,268 (20%)	37%	666	21
Upper Warm Creek	47,638	16,127 (34%)	12%	365	2
Nipple Bench	26,942	5,929 (22%)	4%	88	1
Coyote	44,141	32,659 (74%)	24%	1,173	6
Clark Bench	53,673	435 (1%)	1%	6	1
Cottonwood	83,998	18,524 (22%)	14%	324	7
Wahweap	11,233	11,233 (100%)	8%	400	1
Total		134,400	100%	3,027	40

Source: USDI, BLM, 1979a.

Visual Resources

The BLM visual resource inventory classified approximately 6,600 acres as Class A scenery (5 percent of WSA), 83,700 acres as Class B scenery (62 percent of the WSA), and 44,100 acres as

Class C scenery (33 percent of the WSA). VRM classes are as follows: Class II, 6,000 acres (5 percent of the WSA); Class III, 4,300 acres (3 percent of the WSA); and Class IV, 124,100 acres (92 percent of the WSA). Class IV management is the least restrictive of the management classes. For a discussion of the scenic value of the visual resource, refer to Wilderness Values, Special Features section below. (Appendix 7 describes BLM's VRM rating system.)

Cultural Resources

No formal archaeological inventory has been conducted within the Wahweap Creek WSA. Reconnaissance in the area (along drainages) has resulted in the identification of four small storage structures (granaries) and a rock shelter. These structures date to about 1200 A.D. and are affiliated with the Anasazi culture. No sites are listed in the National Register. No basis for a projection of the site densities or significance exists.

Recreation

Although the Wahweap WSA offers some opportunities for both primitive and nonprimitive types of recreation use (none of which are outstanding), reliable data on existing visitor use are not available. It is expected that visitor use is low, approximately 100 visitor use days annually.

ORV use is limited primarily to the existing ways and trails in the WSA. Existing use of these areas is assumed to be low. For example, most of the use is attributable to deer hunters, yet the number of hunters afield is small. Livestock operators and mineral development interests also make some ORV use of the area. Approximately 8,400 acres are presently limited to existing roads and trails. This area is located along Wahweap, Tommy Canyon, Fourmile, and Nipple Creeks. Also, there are approximately 3,300 acres closed to vehicle use from March 1 to July 1 of each year to protect wildlife interests. This area is located in the lower reaches of Wahweap Creek.

Of the estimated 100 visitor days of use annually, no visitor days are related to commercial outfitting (i.e., river, horses, or vehicular). Approximately 75 percent of the use is attributed to primitive activities and approximately 25 percent is attributed to recreational activities (such as hunting and sightseeing) that currently utilize vehicular access on existing ways.

Big game hunting opportunities in the WSA are probably average when compared to the Paria Planning Unit as a whole. However, big game populations are rated as low to moderate and shooting opportunities are low. The overall success rate in the WSA is approximately 20 percent. Small game populations are generally low, with a lower quality than much of southwestern Utah. The hunting that does take place is primarily by local residents since the poor quality of the hunting experiences here would draw few, if any, outside hunters to the area. Upland game hunting, primarily for mourning dove, is generally similar to the rest of southwestern Utah. The opportunity for quail hunting is poor because of limited huntable populations.

The main sightseeing attraction within the WSA is The Cockscomb or the East Kaibab monocline. The Cockscomb is a major topographic feature in south-central Utah that begins in the northwestern portion of this tract and runs south along the western edge of the unit. Within the WSA The Cockscomb has an average relief of approximately 400 feet. The valley that dissects The Cockscomb is roughly 400 feet deep and forms the double ribs. The Cockscomb is visible to motor vehicle tourists from adjacent boundary roads.

Wilderness Values

SIZE

The WSA contains 134,400 acres and is approximately 20 miles long (north to south) and 15 miles wide (east to west).

NATURALNESS

Imprints of man that remain in the WSA include coal exploration ways on and below Reynolds Point, Fourmile Bench, and John Henry Bench (approximately 40 miles of way exist in the WSA); short fences in Wahweap and Tommy Smith Creeks; impoundments on Jack Riggs Bench and near Chimney Rock; and ways and fences in Coyote Creek. These imprints combined involve less than 1 percent of the WSA.

The quality of naturalness has not changed since the inventory decision. No additional imprints have occurred in the WSA as a result of impairing uses or activities allowed under the BLM's *Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

Outstanding opportunities for solitude in the Wahweap WSA result from the combination of

topographic and vegetation screening, configuration, and size.

The unit is 134,400 acres and its configuration is essentially compact, being approximately 20 miles long north-south and 15 miles wide in an east-west direction. Size and configuration of the unit would normally enhance the opportunities for solitude; however, numerous "cherry-stemmed" intrusions create fingers that penetrate into the unit and detract from the overall solitude experience.

Topographic characteristics that contribute to screening are upper reaches of drainages such as Wahweap and Coyote Creeks, John Henry Canyon, Drip Tank Canyon, and Wesses Canyon. These canyons form dendritic patterns in the WSA. The lower benches, canyons, and sandstone formations (Dakota Sandstone) in the southern portion of the WSA have produced sheer-walled canyons, hoodoos, and balanced rocks, all of which provide topographic screening. Large coves have also eroded into a maze of narrow canyons in this area.

Vegetation complements topography in providing opportunities for solitude in the WSA. The pinyon-juniper type covers approximately 73 percent of the WSA and has a sparse understory of shrubs.

The sights and sounds of human activities are not present from most places within the WSA. It would be easy for a visitor to find seclusion in the canyons and Dakota Sandstone area.

In summary, about 10 percent (13,440 acres) of the WSA meets the outstanding solitude criterion for areas under wilderness review. The bench areas such as Fourmile Bench, Jack Riggs Bench, and Horse Flat are not considered to have opportunities for solitude due to the lack of adequate screening. Approximately 120,960 acres do not meet the standard for outstanding opportunities for solitude.

PRIMITIVE AND UNCONFINED RECREATION

No outstanding opportunities for primitive and unconfined recreation are present within the WSA. The BLM wilderness inventory concluded that the unit did not contain a diversity of recreation activities nor an activity of outstanding quality. Either one of these two factors is necessary to provide for an outstanding opportunity for primitive recreation.

SPECIAL FEATURES

The Wahweap WSA exhibits scientific and scenic values.

The *BLM Intensive Wilderness Inventory* concluded that the previously identified natural area of very old juniper trees on Fourmile Bench possessed supplemental values. The Fourmile Bench Old Tree Area is a unique area of extremely old (1,400 years) pinyon and juniper trees. Prior to identification of the area, it was generally thought that the area's trees did not exceed 600 to 800 years of age. Protection for further scientific study has been considered for the area. The scientific values extend over approximately 1,000 acres of the WSA.

No educational values were identified within the WSA.

The *BLM Intensive Wilderness Inventory* identified two specific locations that offer exceptional scenic geologic values. The lower portions of Wahweap Creek and Coyote Creek have exposed the Dakota Sandstone Formation. The sandstone is most evident in the Coyote Creek drainage in the White Rocks and the Rimrocks. Big White Rock Canyon, Little White Rock Canyon, Chimney Rock Canyon, and Chimney Rock are locations featuring these scenic values. The red-colored Entrada Formation is also exposed in this area and lends visual contrast to the white Dakota Formation. There are sheer-walled canyons, hoodoos, balanced rocks, and large coves with narrow canyons. Approximately 7,000 acres of scenic values are present.

The East Kaibab monocline extends along the western boundary of the WSA. The monocline contains a feature known as Cads Crotch which is a trough running along the crest of the structure. Approximately 4,700 acres are present in the Cads Crotch portion of the monocline.

The *BLM Intensive Wilderness Inventory* also concluded that scenic values were represented in the major canyon systems. These scenic values are most important to the WSA in the upper portions of the Coyote Creek drainage, in the inner canyon of the middle segment of the Wahweap Creek drainage including the West Fork of Ty Hatch Canyon, and in the upper reaches of the Wahweap drainage. The upper portion of the Wahweap system includes Tommy Smith Creek, Fourmile, Tommy, Wahweap, and Long Canyons. In contrast to the Warm Creek drainage canyons

in the WSA, the Wahweap Creek drainage canyons exhibit some riparian vegetation such as cottonwood groves. The vegetation contributes to the landscape qualities of the canyon systems. The total acreage of scenic values in the WSA is approximately 22,300 acres.

No historical values were identified within the WSA.

Land Use Plans and Controls

The WSA lies within the BLM Paria Planning Unit which is being managed under the land use decisions of the Paria MFP (USDI, BLM, 1981b). The present principal use within the WSA is livestock grazing. The WSA encloses 9,766 acres of State land within its boundaries. State lands are managed by the State Land Board for the purpose of generating revenues for the public school system. The State of Utah (Utah Department of Natural Resources and Energy, 1982) proposed to consolidate and exchange land holdings with the Federal Government. This proposal would eliminate all State lands within the Wahweap WSA. There is no private land within the WSA.

The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple use concept."

The Kaiparowits Coal Development and Transportation Study for Southern Utah (Environmental Research and Technology, Inc., 1980) identified a number of transportation corridors and truck haul routes within the WSA. The objective of the study was to identify areas where it would be possible to construct and operate future coal transportation systems within the restrictions of general environmental and engineering constraints. Corridor segments were required to contain at least one potential route for a railroad or coal slurry pipeline. Specific routes, however, were not identified. By selecting corridors between 2 and 15 miles in width, maximum flexibility for future location of specific routes was maintained. Corridors C-13, C-14, C-15, C-16, and C-17 are all within the WSA. However, no one corridor would extend across the entire width of the WSA.

The Union Pacific Railroad (1980) has identified a specific route that is needed for a spur line into the Kaiparowits Coal Field. According to their engineer's report this line would cross through the WSA along the total length of the west side of The Cockscomb. Furthermore, a tunnel through The Cockscomb would be necessary near the northern edge of the unit. The proposed line would exit the unit near The Gut. This route has been delineated by their engineering reports and is on file with the BLM. This route would be included within Corridors C-13, C-14, and C-15 as discussed above.

Also, the eastern boundary road has been proposed as an access route into the coal fields. A proposed loading area has been identified on the eastern edge of the WSA near Pilot Rock. Approximately 38,600 acres within the WSA have been identified as Coal Classification Land. This withdrawal status essentially identifies that area potentially valuable for coal development within the WSA. It flags the area in case other land or mineral proposals overlap that may conflict with future coal development plans. It does not, however, segregate the land from other entry.

Socioeconomics

DEMOGRAPHICS

The Wahweap WSA is located in Kane County, Utah. Kane County is a rural county with a 1980 population of 4,024 persons. The average population density is approximately one person per square mile. The density is very low when compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981).

EMPLOYMENT

Figures show the dominant sector, in terms of employment, in the Kane County economy to be retail trade (17 percent), government (17 percent), and services (14 percent) (USDC, Bureau of Economic Analysis, 1982). The strength of the retail trade sector reflects the importance of tourism to the Kane County economy. Table 5 presents employment and personal income estimates for the county.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral exploration, livestock production, and

TABLE 5
Employment and Personal Income
Kane County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	1,452	12,595
Proprietors	382	2,623
Farm Proprietors	122	136
Nonfarm Proprietors	260	2,487
By Industry Source	—	—
Farm	27	382
Nonfarm	1,043	12,213
Private	798	9,614
Ag. Serv., For., Fish., and Other	(L)	0
Mining	17	196
Construction	51	1,544
Manufacturing	70	566
Nondurable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public		
Utilities	150	1,875
Wholesale Trade	12	230
Retail Trade	252	2,364
Finance, Insurance, and		
Real Estate	39	392
Services	202	2,427
Government and Government		
Enterprises	245	2,599
Federal, Civilian	18	252
Federal, Military	30	78
State and Local	197	2,269

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

recreation. Table 6 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

The WSA has 21 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy.

The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income.

No oil and gas wells have been drilled in the WSA in the past years. No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Forty livestock operators have a total grazing privilege of 3,027 AUMs within the WSA. If all this forage were utilized, it would account for \$60,540 of livestock sales and \$15,135 of ranchers' returns to labor and investment.

TABLE 6
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$295,128
Coal Leases	0	\$ 56,505
Mining Claim Assessment	Less than \$ 2,100	0
Livestock Grazing	\$60,540	\$4,238
Recreational Use	Less than \$410	0
Total	Less than \$63,050	Up to \$355,871

Sources: BLM File Data; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

Some woodland products have been harvested from the WSA; however, the harvests were small and are insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA's nonmotorized and motorized recreational use is low. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Wahweap WSA is estimated at about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Kane County.

The WSA generates Federal revenues from mineral leases and livestock grazing.

Oil and gas leases in the WSA cover approximately 98,376 acres. At up to \$3 per acre, lease rental fees generate up to \$295,128 of Federal revenues annually. The 18 coal leases covering 18,835 acres at \$3.00 per acre lease rental fee generate \$56,505 in sales. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 3,027 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$4,238 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines For All Alternatives

1. The alternatives would be carried out as noted in the Description of the Alternatives section of this document.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable energy resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and coal exploration and development. The area would be partially open to ORV use, grazing, mining, motorized hunting, predator control, and fire,

insect, and noxious weed control without controls for wilderness protection. The degree of future development is unknown but would probably be low due to the WSA's rough terrain. However, the area does have a moderate potential for future development. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: coal, 1,800 acres; oil and gas, 310 acres; and uranium, 20 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) At the most, there would also be 43,100 acres disturbed by proposed land treatments. The 43,100-acre figure is used for analysis purposes but the probability of such extensive treatment is low.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If the oil and gas, uranium, and coal resources are developed in the WSA, air quality could be reduced up to the PSD Class II limitations. Disturbance of 2,130 acres due to mineral activities would result in minor increases in fugitive dust emissions. The amount of emissions and their significance would depend upon the location and duration of the disturbance. The proposed land treatments could have a short-term (2 to 3 years) impact on air quality; however, after new seedings are established there could be an overall reduction in fugitive dust.

GEOLOGY

No impacts to geology are expected from 330 acres of surface disturbances associated with uranium and oil and gas exploration and development activities. There could be some subsidence and fracturing of geologic formations from coal mining, but the extent is unknown. Vegetation treatment would affect only the surface of the land and would not significantly impact geology.

SOILS

It is estimated that up to 2,130 acres of soil could be disturbed by mineral and energy exploration and development. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 2,130 acres would increase from 5,751 cubic yards/year to 11,502 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 5,751 cubic yards (3.3 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible. The Bureau of Reclamation, the agency responsible for reducing Colorado River sediment and salinity, has yet to evaluate Wahweap Creek drainage for possible control measures. The BLM has proposed 9,400 acres for land treatment to reduce erosion. Once this land treatment is in place sediment yield from the WSA would be reduced. Up to 43,100 acres of land treatments have been proposed for the benefit of watershed, wildlife, and livestock. These activities would cause a temporary (2 to 3 year) increase in soil loss. However, as the seedlings become established, reductions from the current soil loss could be expected.

VEGETATION

The anticipated disturbance of 45,230 acres within the WSA would have a significant impact on the existing vegetation. The 2,130 acres disturbed due to mineral activities would eventually be reclaimed to existing vegetation or grass and brush species. The 43,100 acres of land treatment would change the vegetation from pinyon-juniper to a grassland-brush type.

Cymopterus higginsii, a candidate threatened or endangered plant, is found within or near the WSA. Before authorizing surface-disturbing activities (45,230 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed areas. If this species could be affected, the BLM would initiate consultation with the Fish and Wildlife Service (FWS) as required by BLM policy. Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of threatened, endangered or sensitive plant species would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 5,751 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Paria Planning Unit. A slight increase in salinity and sediment could occur due to the disturbance of 2,130 acres from energy and mineral exploration and development.

The proposed land treatment of 43,100 acres could cause a temporary (2 to 3 year) increase in TDS. However, after the new seedlings are established, water quality could be expected to improve.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and would not significantly impact ground water quality or quantity. Disturbance to underground aquifers could reduce the quality and flow of ground water if coal were mined. The impact of coal mining on ground water would be partially mitigated by constraints on development required by State laws.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 to 50 million barrels of oil in-place (3 to 15 million estimated recoverable) and up to 60 to 300 billion cubic feet of natural gas (18 to 90 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 and 3 stipulations, and would not be affected by the adoption of this alternative. Approximately 310 acres of surface disturbance would take place if exploration and development were to occur. The degree of future development is unknown; the unit has a low certainty for the occurrence of oil and gas deposits.

Coal

An estimated coal resource of 500 million tons of recoverable coal occurs on 36,225 acres of the WSA. This resource could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that up to 1,800 acres of surface disturbance could occur from coal development. The likelihood for production of coal is thought to be low in the near future on the 18,835 acres under lease and 17,390 acres unleased within the WSA because of the problems of economic and environmental considerations (poor accessibility, lack of abundant water, high costs of underground mining, and competition from nearby areas where coal is more readily available and of better quality). However, the coal within the WSA has been rated as having a high potential for development in the future.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain

open to mining claim location. The potential deposit of up to 500 tons of uranium oxide and an unknown amount of titanium could be developed. Approximately 20 acres could be disturbed due to exploration and development of locatable mineral resources. However, the degree of future development is unknown but would probably be low due to economic considerations (e.g., transportation costs, low potential).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the availability of water through the construction of water catchments, reservoirs, and the improvement and maintenance of springs. However, disturbance of an estimated 2,130 acres (2 percent of the WSA) through mineral and energy development and exploration would disrupt wildlife. Deer, pronghorn antelope, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Bald eagle and peregrine falcon would also avoid the disturbed area. The 40,300 acres of vegetation treatment for wildlife and livestock could be developed and would improve wildlife habitat and possibly increase their numbers.

FOREST RESOURCES

Since there are few trees other than pinyon and juniper, none of which are utilized (except by occasional campers or hikers), no significant impacts to forest resources are expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Paria Planning Unit MFP. The 3,027 AUMs currently allocated in the WSA are controlled by 40 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Few, if any, changes in livestock management techniques are expected. The proposed improvements and 9,800-acre land treatment could be developed and would result in improved livestock distribution and increased carrying capacity (1,600 AUMs).

VISUAL RESOURCES

Under this alternative 43,100 acres of vegetation manipulation would occur and 2,130 acres of mineral and energy related exploration and development are possible. Even though mitigative measures would be applied to minimize visual

contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. If disturbance occurs in VRM Class II areas VRM objectives would probably not be met during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality would be significantly reduced in the WSA as a whole. In this WSA the areas are not underlain by coal and are not within proposed land treatments; therefore, Class II, III, and IV standards probably would be met.

CULTURAL RESOURCES

The archaeological sites in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 45,230 acres by mineral exploration and development and land treatments under this alternative could affect potential National Register sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative 43,100 acres of vegetation manipulation would occur and mineral-related exploration and development are possible on 2,130 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation. Vegetation treatment would reduce the quality of primitive recreation on about 32 percent of the WSA.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over

the next 20 years. At this rate overall recreational use is expected to increase from 100 current visitor days per year to 150 visitor days at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 75 visitor days per year to about 112 visitor days per year over the next 20 years. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, etc.) would increase from 25 visitor days per year to 38 visitor days.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Paria Planning Unit MFP. Expected mineral and energy exploration and development could disturb an estimated 2,130 acres and 43,100 acres could be disturbed through vegetation manipulation.

The related surface disturbance would result in a significant loss of naturalness and solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. Naturalness would be lost on about 32 percent of the WSA as a result of vegetation treatments.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Kane County Master Plan* which recommends multiple use. This alternative is based on implementation of the current BLM Paria Planning Unit MFP and is, therefore, in conformance with it. The No Action Alternative would be consistent with State of Utah plans and policies that emphasize economic return. It would also allow for consideration of the proposed coal transportation corridors.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the uranium, oil and gas, and coal in the WSA were developed, it would lead to an increase in employment and income for Kane County. The probability of economic development of minerals within the WSA is moderate to high (refer to the Mineral and Energy Resources section for a description of mineral and energy development potentials).

There would be no livestock-related economic losses because the existing grazing use (3,027 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$60,540 annually in livestock sales and \$15,135 of ranchers' return to labor and investment. The proposed vegetation land treatments that would produce 1,600 AUMs of new allocated forage could lead to \$32,000 of livestock sales and \$8,000 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase 50 visitor days per year over the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 35,324 acres for oil and gas and 17,390 acres for coal in the WSA open to oil and gas and coal leasing that are currently not leased. If leased, they would bring up to \$158,142 additional Federal lease fee revenues per year in addition to new royalties from lease production and bonus bids from new coal leases. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$4,238 per year) would continue. The additional 1,600 acres of forage that would be produced by proposed new range improvements and allocated to livestock under this alternative would increase Federal revenues by \$2,240 annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (134,400 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 134,400-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 40 miles of existing vehicular ways in the

WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that mining claims would be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases and coal leases would expire before production of commercial quantities. Oil and gas and coal leases would not be renewed and future leasing of oil and gas or coal would not be allowed. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates for the WSA.) It is also assumed that the proposed land treatments would not be allowed.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (20 vs. 2,130 acres for mineral development and 43,100 acres for land treatment), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could not occur unless they could be developed in a manner nonimpairing to wilderness. The likelihood of the four proposed reservoirs being developed is low; the three spring developments and three water catchments would be analyzed on a case-by-case basis to determine if they would be constructed.

Uranium and oil and gas exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and activities would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 98,376 acres (53,156 acres pre-FLPMA and 45,220 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of 10 to 50 million barrels of oil in-place and less than 60 to 300 billion cubic feet of natural gas with 3 to 15 million barrels of oil and 18 to 90 billion cubic feet of natural gas potentially recoverable could be foregone under this alternative although no development is currently taking place. However, due to the size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Coal

The WSA has an estimated coal reserve of 1 billion tons of which 500 million tons are recoverable. Approximately 52 percent of the coal reserve is presently under lease. It is assumed that current leases will expire before diligent development occurs and that new leasing will not occur. It is therefore concluded that approximately 500 million tons of recoverable coal would be foregone.

The potential for developing this resource is low in the near future. However, the long-term potential for development is high.

Locatable Minerals

Approximately 420 acres are under mining claim within the WSA, probably for uranium or titanium. Up to 500 tons of uranium oxide and an unknown amount of titanium present within the WSA could be developed, disturbing 20 acres. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If the potentially recoverable minerals are not within mining claims filed before designation, the potential for recovery of the uranium oxide or titanium would be foregone. It is estimated that, if uranium or titanium deposits are located prior to designation, up to 20 acres could be disturbed due to exploration and development of the resources should this alternative be adopted. Because production of these metals is not currently occurring and because economic considerations (e.g., transportation, low potential, market price, etc.) are unfavorable, it is

unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of recoverable uranium or titanium resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However, water is a limiting factor for wildlife in this WSA. If future water improvements were curtailed and the three proposed livestock reservoirs not constructed, potential habitat for deer, antelope, and nongame species would be reduced. The 43,100-acre land treatment proposed would be foregone. Loss of the land treatment proposal would reduce the likelihood of expanding and improving the deer herd and nongame species within the WSA.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Paria Planning Unit MFP. The 3,027 AUMs currently allocated in the WSA are controlled by 40 livestock permittees. The proposed 9,800-acre land treatment and four reservoirs would not be allowed. Therefore, the additional 1,600 AUMs of livestock forage would be foregone. Since motorized vehicles are used in livestock management, some adverse effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. In the case of the 6 miles of pipeline, three spring developments, three water catchments, 4 miles of fence, and 3 miles of trail, which of these would be allowed, if any, is unknown since each would be considered on a case-by-case basis.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative the disturbance from 43,100 acres of planned vegetation manipulation

would not occur and the possible mineral-related surface disturbance would be reduced from 2,130 acres to 20 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA likely following wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. The 25 visitor days of ORV play activity and/or vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA. Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA.

WILDERNESS VALUES

Designation and management of all 134,400 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude. Solitude would be preserved on approximately 13,440 acres that meet standards. Naturalness would be

preserved on all 134,400 acres. There are no acres with outstanding opportunity for primitive and unconfined recreation. The special features in this WSA (scientific values and scenic values) would also be protected and preserved. No development of leases is foreseen under this alternative. The possible mineral-related surface disturbance would, therefore, be reduced from 2,130 acres to 20 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. However, because the potential for locatable mineral production is low and mitigation would be imposed to protect wilderness values, loss of these values under wilderness designation would be less likely than under the No Action Alternative. If coal were developed on adjoining lands, outside sights and sounds could impair the WSA's wilderness values.

LAND USE PLANS AND CONTROLS

The *Kane County Master Plan* recommends multiple use of all public lands in the county. This alternative would not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. However, designation would conflict with the county's plans because oil and gas and coal leases would expire, future leasing and location of minerals would not be allowed, and restrictive conditions would be placed on mineral development. If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

This alternative would conflict with proposed transportation corridors as described in the "Kaiparowits Coal Development and Transportation Study" (Environmental Research and Technology, 1980). It also conflicts with the proposal by Union Pacific Railroad (1980) for a railroad route from the Kaiparowits Coal Fields.

The Paria Planning Unit MFP does not provide for wilderness designation. Designation of the WSA as wilderness would be an amendment to the MFP.

SOCIOECONOMICS

Overall there would be no immediate changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there could be losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 6) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is moderate to high (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas and coal leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. It is assumed that existing oil and gas and coal leases would expire before commercial quantities are developed. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. It is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation in the near future, but in the long term losses of coal development could be significant to the economy of Kane County. Any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$60,540 of livestock sales and \$15,135 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income. The loss of nine proposed improvements would eliminate the possibility of a potential increase of \$8,000 in ranchers' returns to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Motorized recreational use of the WSA is light. The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 98,376 acres now leased for oil and gas would cause an eventual loss of up to \$295,128 per year of lease fees to the Federal Treasury. Loss of 18,835 acres leased for coal would cause a loss of \$56,505 annually in Federal revenue. There would also be a potential loss of \$158,142 annually in Federal revenues from the 35,324 acres that could be leased for oil and gas and 17,390 acres for coal without designation. In addition to these rental fees, any potential royalties from new lease

production and bonus bid revenues from new coal leases could also be foregone.

If the proposed range improvements are not developed and used, an estimated annual \$2,240 of Federal grazing revenues from 1,600 increased AUMs would be foregone.

Wilderness designation would eliminate the potential for woodland product harvesting and related Federal revenues.

Partial Wilderness Alternative (70,380 Acres)

(Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 70,380-acre area designated as wilderness and the 64,020-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, some of the existing mining claims would eventually be explored and developed, causing an estimated 10 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and that coal leases would not be developed within the portion designated wilderness. Unleased coal areas would not be leased in the future. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed.

It is assumed that, within the nondesignated area, only 1,940 acres would be disturbed sometime in the future due to mineral, oil and gas, and coal exploration and development. Overall, 1,950 acres of surface disturbance would occur within the WSA, 190 acres less than under the No Action Alternative and 1,930 acres more than with the All Wilderness Alternative. (Appendix 10 lists the mineral-related surface disturbance assumptions and estimates for the WSA.) In the nondesignated area there would also be 17,950 acres of land treatment.

The analysis of the No Action Alternative, based on 2,130 acres of mineral-related surface disturbance and 43,100 acres of land treatment, shows that full development of potential resources with associated surface disturbance would affect air quality, geology, water, forest, and cultural

resources. These resources would be affected to a lesser degree by this Partial Wilderness Alternative which assumes 1,950 acres of surface disturbance due to mineral activities and 17,950 acres of land treatment.

Restrictions on management and development methods within the WSA would result in essentially the same impacts on development of water sources, soils, vegetation, mineral and energy resources, wildlife, livestock grazing, and land use plans as described for the All Wilderness Alternative. The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 32,934 acres of oil and gas leases in the area that would be designated wilderness. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 to 50 million barrels of in-place oil and less than 60 to 300 billion cubic feet of natural gas is within the area that would be designated as wilderness under this alternative. Of these amounts, 3 to 15 million barrels of oil and 18 to 90 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 1.5 to 7 million barrels of oil and 9 to 45 billion cubic feet of natural gas could be foregone. This would allow recovery of 1.5 to 7 million more barrels of oil and 9 to 45 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Coal

Under this alternative, approximately 640 acres of unleased coal would be foregone from potential development. Based on the current situation, this would amount to approximately 15 million tons of in-place coal, of which 33 to 50 percent would

represent recoverable coal. The existing coal leases would not be directly impacted by wilderness designation. Ancillary facilities off the leased tracts, such as rights-of-way, could be severely restricted. This Partial Wilderness Alternative would mitigate conflicts by eliminating most of the coal resource in the portion that would be designated wilderness.

Locatable Minerals

Approximately 180 acres of the 420 acres of existing mining claims are within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981a).

It cannot be determined how much of the potential 500 tons of uranium oxide and an unknown amount of titanium in the WSA is within the area that would be designated as wilderness under this alternative. Assuming that the locatable minerals are evenly distributed in the WSA and that the mineral deposits are not included in mining claims filed before designation, the potential for recovery of up to 260 tons of uranium and 52 percent of an unknown amount of titanium would be foregone.

Because these minerals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without wilderness designation. Therefore, this alternative would not prevent recovery of significant amounts of uranium and titanium.

LIVESTOCK

The effect of designation of 70,380 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 3,027 AUMs allocated, 1,574 would be within the designated portion of the WSA and 1,453 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 1,574 AUMs in the designated portion could be restricted to preserve wilderness values. Wilderness designation would preclude the potential plowing, chaining, and seeding of approximately 8,880 acres of land within the WSA. This would amount to a loss of approximately 1,440 AUMs. Wilderness designation could impose construction con-

straints on future range projects proposed in the Paria MFP such as the proposed two spring developments, 4 miles of fence, 5 miles of pipeline, and three water catchments. Range improvements designed primarily to increase livestock use would not be permitted. In the non-designated area 1,000 acres of land treatment, 1 mile of pipeline, four reservoirs, one spring development, and 3 miles of stock trail could be constructed. Approximately 160 additional AUMs would be produced.

VISUAL RESOURCES

Because total mineral-related surface disturbance in the WSA would be 1,950 acres under this alternative, as opposed to 2,130 acres under No Action and 10 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and more than under the All Wilderness Alternative. In the portion recommended for designation, 10 acres of surface disturbance from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 1,940 acres in the nondesignated portion of the WSA would be disturbed. Because disturbance is unlikely in the Class II areas, VRM objectives would probably be met. Upon designation, the VRM classes would be changed on 70,380 acres from the existing Classes II (4,050 acres), III (3,050 acres), and IV (63,280 acres), to VRM Class I. VRM Class I provides primarily for natural ecological changes. However, it does not preclude very limited management activity (BLM Manual 8411). The scenic quality rating would not change.

RECREATION

Impacts on recreational values and opportunities for the 70,380-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the present lack of such activity in the area; however, approximately 10 miles of ways within the WSA would be closed to ORV use.

In the area that would not be designated (64,020 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the

70,380 acres that would be designated wilderness. Size, naturalness, outstanding opportunities for solitude, and special features would be preserved in the portion designated. Although recreational use could increase (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the area would be low. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 10 acres. Additionally, sights, sounds, and emissions of activities within and adjacent to the 70,380-acre area that would not be designated could result in loss of solitude and primitive recreational values within the designated portion.

In the 64,020-acre area that would not be designated, there would be 1,940 acres of disturbance from mineral and energy exploration and development activities and those activities would degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation [both rated less than outstanding]) from the commencement of activities through rehabilitation. Thus, long-term impairment of wilderness values in the portion that would not be designated would be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude values in the portion that would be designated.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative, with the exception of conflicts with Kaiparowits coal transportation corridors. Conflicts with Corridor C-13 would be eliminated as would conflicts with the proposed

rail route through The Gut. This alternative would also not be consistent with the *Kane County Master Plan*.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

Livestock grazing fees of \$4,238 would continue to be collected by the Federal Government and sales (\$60,540) and returns (\$15,135) to ranchers would continue to be generated. Approximately 8,800 acres of land treatment would not be allowed and a potential 1,440 AUMs and associated economic benefits would not occur (revenues, \$2,016; returns \$7,200; and sales, \$28,800). An additional 160 AUMs would be produced annually to increase annual Federal revenues by \$224 and livestock sales by \$3,200.

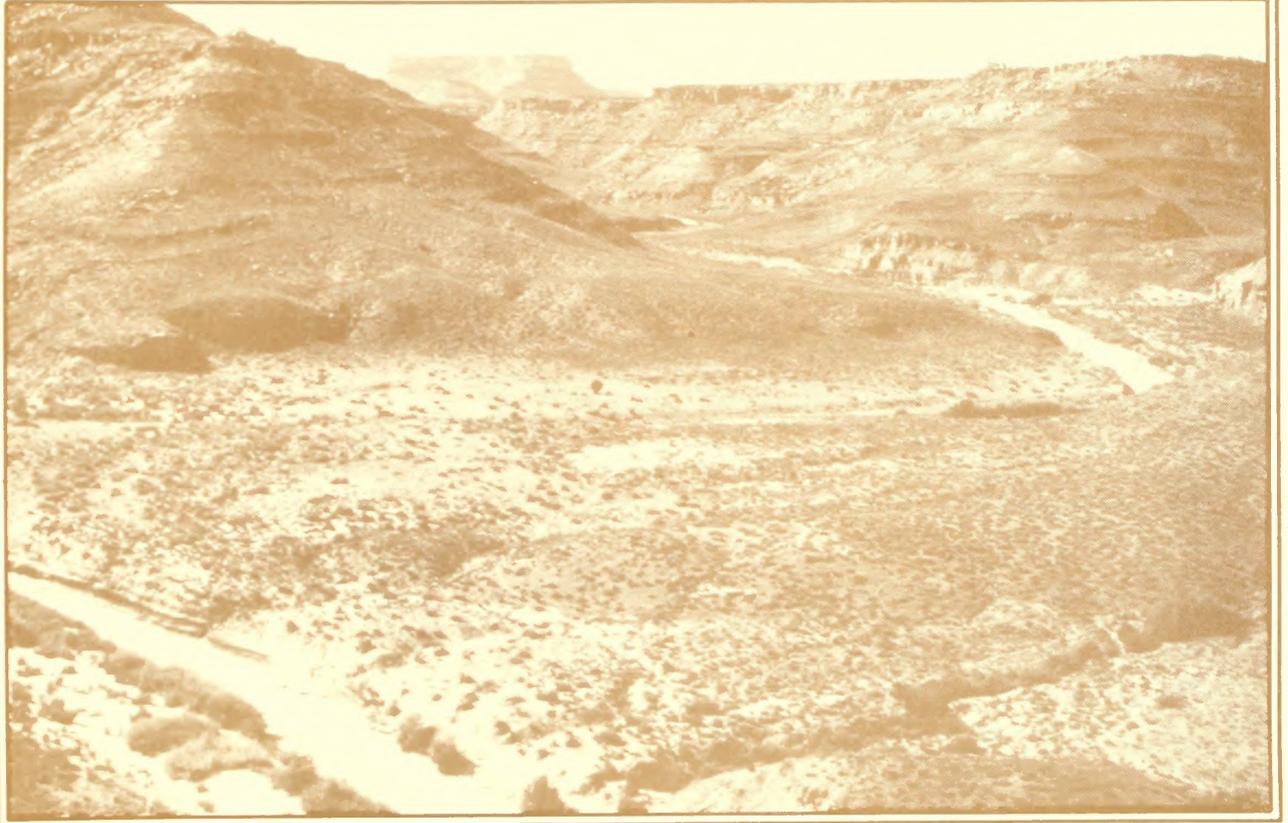
Annual revenues from coal leases would remain, but an opportunity to lease 640 acres of the 17,390 acres currently unleased for coal development would be foregone. Oil and gas revenues would be reduced by \$98,802 annually, and an opportunity to lease 30,386 acres of the 35,324 unleased acres would also be foregone. The loss of opportunity to lease unleased oil and gas and coal areas would lead to an eventual loss of \$93,078 annually in Federal revenue.

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Burning Hills WSA



BURNING HILLS WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	3
Alternatives Considered and Eliminated from Detailed Study	3
Alternatives Analyzed	3
No Action Alternative (Proposed Action)	3
All Wilderness Alternative	5
Summary of Environmental Consequences	7
AFFECTED ENVIRONMENT	9
Air Quality	9
Geology	9
Soils	9
Vegetation	10
Water Resources	10
Mineral and Energy Resources	10
Wildlife	13
Forest Resources	13
Livestock and Wild Horses/Burros	13
Visual Resources	14
Cultural Resources	14
Recreation	14
Wilderness Values	14
Land Use Plans and Controls	15
Socioeconomics	15
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	17
Analysis Assumptions and Guidelines for All Alternatives	17
No Action Alternative (Proposed Action)	17
All Wilderness Alternative	20
BIBLIOGRAPHY	25

BURNING HILLS WSA

(UT-040-079)

INTRODUCTION

General Description of the Area

This WSA is located on the Kaiparowits Plateau in southeastern Kane County and contains 61,550 acres. It is managed by the Kanab Resource Area of the Cedar City District.

The WSA encompasses a portion of the Last Chance drainage and is bounded by the Smoky Mountain, Collet Top, and Croton Canyon roads. It is approximately 15 air miles northeast of Glen Canyon City. The WSA is characterized by an undulating plateau surface cut by canyons. Vegetation consists of desert shrub and pinyon-juniper.

Average annual precipitation in the Burning Hills WSA varies from 10 to 14 inches due to the unit's large size and variations in altitude. Highest monthly precipitation occurs from July through December, during which time two-thirds of the yearly total falls. Intensive thunderstorms are common during the summer months.

Temperatures vary greatly with aspect and altitude. July and January are the warmest and coldest months, respectively. July temperatures range from 50 degrees Fahrenheit (F) to over 100 degrees F, while the January range is from below 0 to 60 degrees F.

Specific Issues Identified in Scoping

Several concerns pertaining to the wilderness study process and/or the environmental analysis process were raised during scoping. These concerns are discussed in the Scoping section of Volume I rather than in individual analyses of WSAs.

General issues pertaining to the WSAs in the Kanab Resource Area are discussed in Volume I. Specific issues pertaining to the Burning Hills WSA identified through formal public scoping meetings held in the spring of 1984 (USDI, BLM, 1984) are responded to below.

1. *Comment:* The occurrence of the sensitive plant species *Penstemon atwoodii* in or near this WSA should be considered in the decisionmaking process.

Response: By policy the BLM is committed to the protection of sensitive plant species. The sensitive plant species *Penstemon atwoodii* will be considered in the decisionmaking process.

2. *Comment:* What would the effect of designation be on mining removal and transport of coal from leaseholds?

Response: Coal could be developed under existing leases after designation. Designation, however, could affect transportation corridors, making coal removal more expensive.

3. *Comment:* Coal production would be extremely difficult and could not be extracted profitably in the near future. The lack of adequate transportation and cost of production should be considered. Would the wilderness values lost outweigh the benefits of coal development?

Response: Opportunities foregone are analyzed and discussed in the Wilderness Values and Mineral and Energy Resources sections of this document.

4. *Comment:* The Site-Specific Analysis (SSA) acknowledges coal resources are not immediately important yet dismisses the wilderness alternative because it is in perpetuity. What Congress designates it could undesignate, but destruction of wilderness values could not be reversed.

Response: During scoping for this Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input



is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

5. *Comment:* Could coal resources be extracted by underground mining methods with access on the border or outside the WSA?

Response: It is doubtful that coal could be extracted by underground mining methods by means of access from outside the WSA along the western boundary because the coal seams dip to the west away from the WSA. This would require that any mining of seams in this area be located within the WSA. The shallower coal seams (less than 1,000 feet) in the eastern portion of the WSA could not be mined from outside the WSA without affecting the Fifty Mile Mountain WSA which is adjacent to the Burning Hills WSA. There is an area along the northeastern portion of the WSA where access could be obtained from outside the WSA boundary. The coal that could be accessed from outside the WSA boundary represents only a small percentage (less than 10 percent) of the recoverable coal.

6. *Comment:* Would wilderness designation be consistent with local and State land use planning in this WSA?

Response: The *Kane County Master Plan* recommends multiple use of the area. Wilderness designation would not be consistent with their master plan. If the State land within the WSA is exchanged for lands outside the WSA, wilderness designation would not conflict with State policy and plans.

7. *Comment:* A map showing the locations of leases within this WSA should be included in the EIS.

Response: This EIS is of necessity a summary of a large amount of technical data. If more information on the location of leases is

needed, maps of energy leases are available at the BLM Cedar City District Office.

8. *Comment:* How would BLM wilderness boundaries and acreages be changed if needed?

Response: No alternative boundaries were suggested during scoping. A partial designation alternative would not eliminate resource conflicts in this WSA. Once an area is established as wilderness by Congress, only Congress can change its boundaries.

9. *Comment:* The SSA stated that lack of outstanding primitive recreation opportunity detracts from the area's wilderness quality. Cannot areas containing only outstanding solitude become wilderness?

Response: To be considered as a wilderness candidate, the area must contain outstanding primitive recreation opportunities and/or outstanding solitude and be in a natural condition.

10. *Comment:* The Glen Canyon National Recreation Area (NRA) 1972 Enabling Act (Lloyd Act) directed a study of proposed road alignment within and adjacent to the recreation area. If a road were constructed, it could impact this WSA.

Response: Various road alternatives have been discussed for the area; however, the BLM is not aware of any specific proposals.

11. *Comment:* The brochure indicated that there are outstanding opportunities for solitude in about 45 percent of the WSA, while BLM's technical report (SSA) indicated relatively limited opportunities for outstanding solitude. This change inflates the area's importance as wilderness.

Response: After further study, it was determined that up to 45 percent of the WSA possesses outstanding opportunities for solitude.

12. *Comment:* The oil and gas (mineral) potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be high. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies.

BURNING HILLS WSA

The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

No alternatives were identified for this WSA during scoping other than those analyzed.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (61,550 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

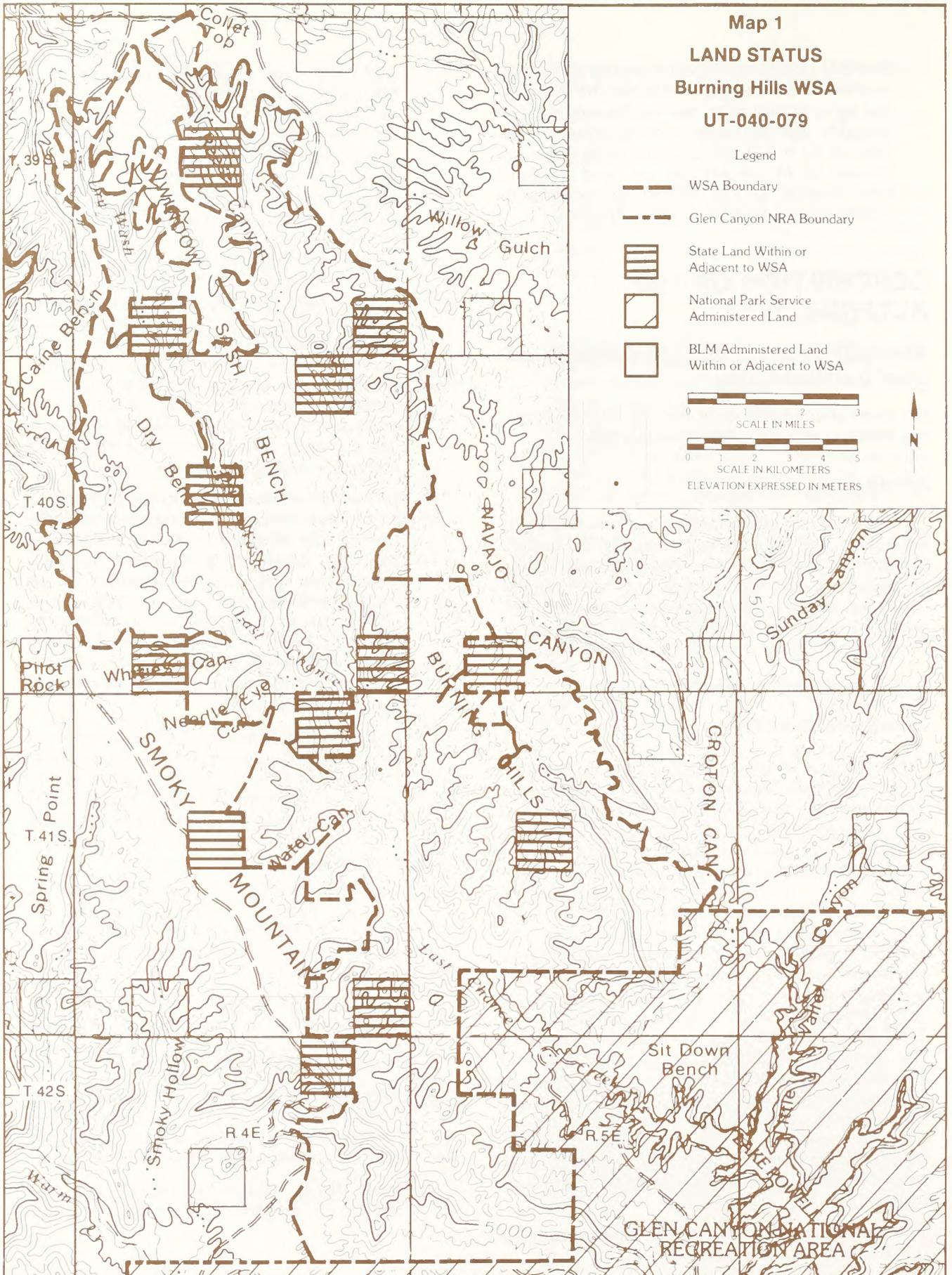
(PROPOSED ACTION)

Under this alternative, none of the 61,550-acre Burning Hills WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Paria Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981b). The 3,839.72 acres in six sections of State land within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase. About 3 percent of the Federal lands in the WSA have been identified by the State of Utah for exchange to State ownership under the Project BOLD proposal (refer to Volume I); under the No Action Alternative, it is assumed that this transfer of ownership would be allowed should the State's proposal be enacted by Congress. Inasmuch as the Project BOLD proposal has not yet been approved, the description of the No Action Alternative for this WSA is based on continued Federal land ownership and BLM administration.

The following are specific actions that would take place under this alternative:

- All 61,550 acres would remain open to mineral location and sale. Development work, extraction, and patenting would be allowed on 23 existing mining claims (460 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809), without consideration for wilderness values. Existing oil and gas leases (63 leases totaling 54,093 acres) could be developed under Category 1 (standard stipulations) without concern for wilderness values. The balance of the WSA (7,457 acres) could be offered for new oil and gas leases under Category 1. Existing coal leases (17 leases covering 13,100 acres) and future new coal leases on 48,450 acres not currently leased could be developed without wilderness considerations.
- Domestic livestock grazing use of the WSA would continue as authorized in the MFP (currently 962 Animal Unit Months [AUMs]). Existing developments for livestock (five spring developments) would continue to be maintained. The range improvements proposed in the MFP (3.25 miles of fence, five cattleguards, three wells, one spring and trough, one catchment, 1 mile of trail, and 872 acres of seeding) would be allowed.
- Use, maintenance, and development of facilities and improvements for wildlife, water resources, etc. could be allowed if in conformance with the MFP. About 3,000 acres of wildlife land treatment potential have been identified and one guzzler is proposed.
- The WSA would continue to be open to off-road vehicle (ORV) use, except for about 10,000 acres in the Last Chance drainage, where use is limited to existing roads and trails.
- All of the WSA would be open to woodland product harvest. There has been some noncommercial harvest of forest products (fuelwood and posts) in the past.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (6,000 acres), Class III (15,000 acres), and Class IV (40,550 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without

BURNING HILLS WSA



concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.

- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

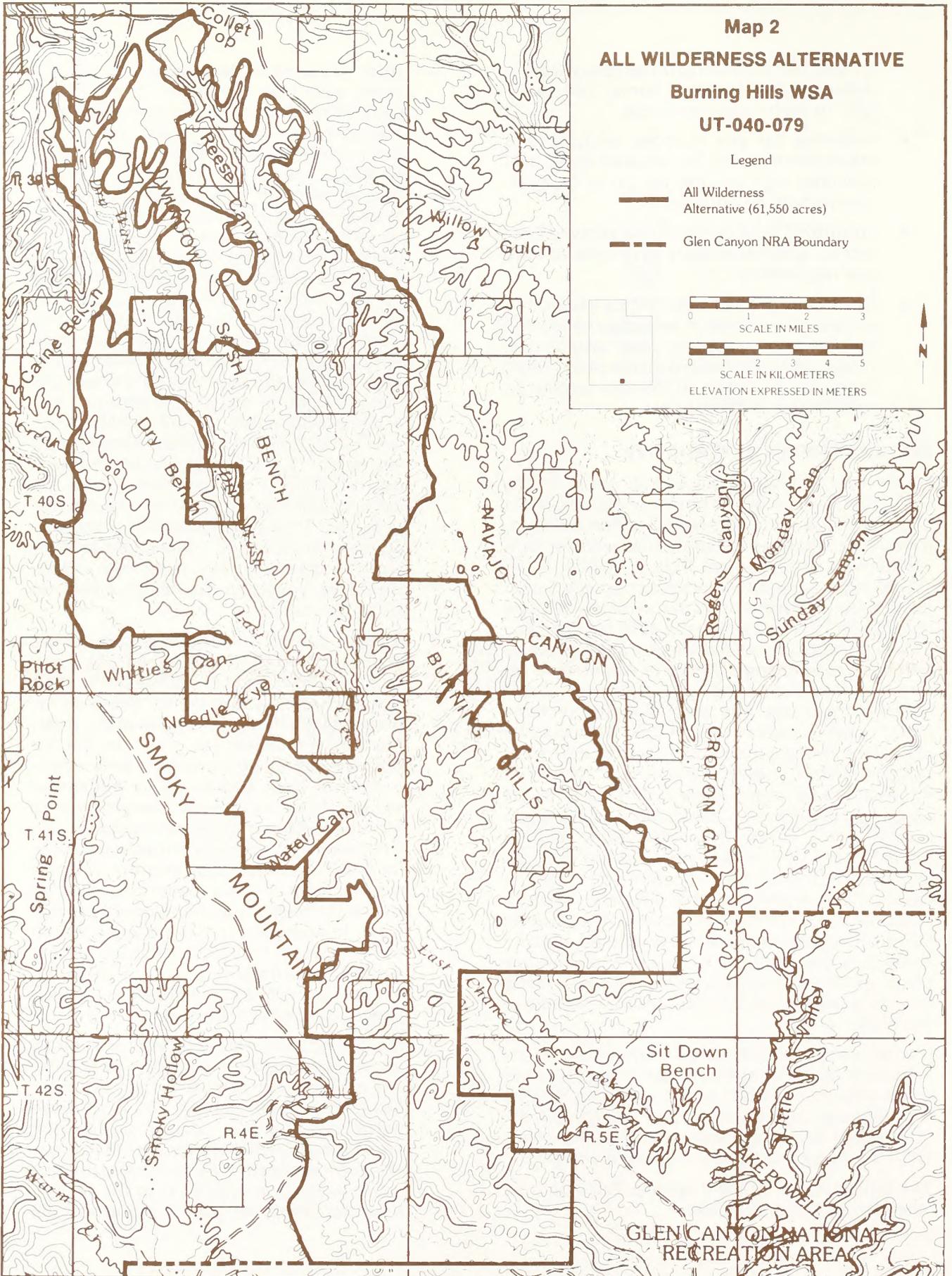
Under this alternative, all 61,550 acres of the Burning Hills WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981a) to preserve its wilderness character. Upon designation, acquisition of six sections of State land (3,839.72 acres) within the WSA (refer to Map 1) would be likely, and could be authorized by purchase or exchange. (Refer to Appendix 3 for further information on State in-holdings.) Additionally, the State has identified six sections (3,927 acres) adjacent to the WSA that would be logical for exchange inasmuch as they are totally surrounded by ("cherry-stemmed into") the WSA. These sections would likely be included in the exchange, resulting in a total State land exchange area of 7,877 acres. One other State section adjacent to the WSA likely would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

It is assumed that under the All Wilderness Alternative the lands identified for exchange to State ownership (about 1,847 acres) would be deleted (or shifted to allocation outside the WSA) from the Project BOLD proposal and that the entire WSA would be managed in Federal ownership.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 61,550 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting of 23 existing mining claims on 460 acres, as well as any new claims located prior to wilderness designation, would be allowed if they are determined to be valid. Development of any such valid claims would be regulated by unnecessary or undue degradation guidelines, with concern for wilderness values. Existing oil and gas leases involving 54,093 acres would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown. No new oil and gas leases would be issued. It is assumed that existing coal leases (17 pre-FLPMA [Federal Land Policy and Management Act] leases on 13,100 acres) would be terminated if diligent development criteria are not met, and they would not be extended or reissued. Those leases meeting the diligence criteria would be allowed to continue production. No new coal leases would be issued on the 48,450 acres not currently leased.
- Present domestic livestock grazing would continue as authorized in the Paria Planning Unit MFP. The 962 AUMs in the WSA would remain available to livestock as presently allotted. After designation, existing range facilities (as listed in the No Action Alternative) could be maintained in a manner least degrading to wilderness values. New rangeland developments would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that wilderness protection criteria are met (refer to Appendix 1). It is assumed that all the proposed facilities listed in the No Action Alternative would be allowed, except for the 872 acres of seeding, which likely would not be allowed.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the

BURNING HILLS WSA



Map 2

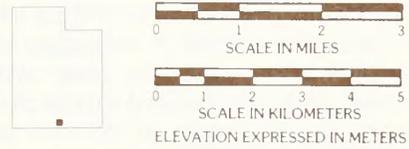
ALL WILDERNESS ALTERNATIVE

Burning Hills WSA

UT-040-079

Legend

- All Wilderness Alternative (61,550 acres)
- - - Glen Canyon NRA Boundary



BURNING HILLS WSA

U.S., 1964). With the exception of existing and proposed water developments for livestock and wildlife, no water resource facilities or treatments are located in the Burning Hills WSA, and none are planned.

- Wildlife transplants or developments would be allowed after designation only if compatible with wilderness values. Currently, there are no wildlife developments in the WSA. It is assumed that the proposed wildlife guzzler would be allowed, but that the potential 3,000-acre wildlife land treatment would not be allowed.
- The entire 61,550-acre area would be closed to ORV use except for (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 11 miles of existing ways would be closed. Existing roads and ways would be "cherry-stemmed" in the following five locations: Dry Wash, 3.5 miles; north of Whities Canyon, 0.75 mile; southeast of Needle Eye Canyon, 1.50 miles; Water Canyon, 1.0 mile; and northeast of Burning Hills, 3.25 miles. The 10 miles of "cherry-stemmed" roads or ways and about 21 additional miles of dirt roads that border the WSA would remain open to vehicular use.
- A specific Wilderness Management Plan would be developed that would govern use and protection of the 61,550-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means.
- Visual resources in the WSA would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter or disturb the landscape). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Activities for the purpose of gathering information about natural resources would be allowed by permit provided these are carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

BURNING HILLS WSA

**TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
BURNING HILLS WSA**

Resource	Alternatives	
	No Action (Proposed Action)	All Wilderness (61,550 Acres)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 500 tons of uranium oxide. In the long term there is a high probability of recovery of 464 million tons of coal.	Oil, gas and coal likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. Due to the low likelihood of recovery of oil, gas and uranium, the loss of development opportunity would not be significant. The loss of coal recovery could be significant in the long term.
Wildlife	About 5 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. Wildlife would benefit from land treatments on about 5 percent of the WSA.	Wildlife would benefit from solitude, but land treatments on 3,000 acres that would benefit wildlife would not be allowed.
Livestock	Grazing of 962 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of one spring development, one catchment, three wells, five cattle guards, 3.25 miles of fence, 1 mile of trail, and 872 acres of land treatments, could be implemented. These improvements could increase grazing potential by 100 AUMs.	Grazing of 962 AUMs and maintenance of existing developments would continue. New developments proposed in the future might not be allowed. The land treatment would not be allowed and a potential for 100 AUMs of additional forage would be lost.
Visual Resources	The quality of visual resources could be impaired on up to 7,132 acres.	Visual quality could be impaired on up to 20 acres.
Recreation	ORV use would continue on 11 miles of ways at current low levels. Overall recreational use could increase from the present 100 visitor days per year to 150 over the next 20 years. Up to 3,260 acres of mineral-related disturbance and 3,872 acres of land treatment could reduce the quality of primitive recreation.	The WSA, including 11 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 7,132 acres (11.6 percent of the WSA). As a worst-case, wilderness values could be lost throughout the WSA depending on access and location of development.	Wilderness values would be protected, except on up to 20 acres (less than 0.1 percent of the WSA) which may be disturbed by development of valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with the <i>Kane County Master Plan</i> , State of Utah plans and policies, and the current BLM Paria MFP. Approximately 3 percent of the WSA would be transferred to the State of Utah if Project BOLD is carried out.	This alternative would not be consistent with Kane County's concept of multiple use. It would be consistent with State policy if lands were exchanged. Designation would constitute amendment of the BLM Paria MFP. This alternative would conflict with Project BOLD.
Socio-economics	Annual local sales of less than \$21,950 and Federal revenues of up to \$202,926 would continue. An additional \$167,721 per year in Federal revenues could be derived from leasing of oil, gas and coal on presently unleased areas. Proposed rangeland developments could increase local benefits by up to \$2,000 and Federal grazing revenues by \$140 per year.	Annual local sales of less than \$21,950 and Federal revenues of up to \$1,347 would continue, but Federal revenues of up to \$369,300 from mineral leasing would be foregone. Annual local sales of \$2,000 and Federal grazing revenues of \$140 from rangeland improvements would also be lost. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.

AFFECTED ENVIRONMENT

Air Quality

The Burning Hills WSA has a Class II Prevention of Significant Deterioration (PSD) classification under the Clean Air Act Amendments of 1977. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government or Congress, not of the BLM (USDI, BLM, 1982b).

No measurements of air pollution or visibility levels have been made in the WSA; however, data collected from various sites (Page, Arizona and Four Mile Bench, Garfield County, Utah) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations. Visibility within the WSA is excellent.

Geology

The Burning Hills WSA lies within the Kaiparowits Plateau-Escalante Benches section of the Colorado Plateau Physiographic Province. In general, the WSA consists of undulating plateau surfaces into which the major drainages have cut deep canyons. In the eastern portion of the WSA only a few flat plateau remnants remain. Above these cliffs are rounded knolls reddened by burned coal. Along the base of the cliffs are large areas of landslide, huge blocks of former upland strata in a mass of finer material. The principal drainage is the Last Chance Creek, an intermittent stream that drains to the south.

Jurassic to Cretaceous strata are exposed in the WSA. Jurassic strata, consisting of the Morrison Formation, are exposed in only a limited area in the extreme southern part of the WSA. Cretaceous strata include the Dakota, Tropic, and Straight Cliffs Formations. The Straight Cliffs Formation forms the most extensive exposures and is also the only coal-bearing unit in the WSA.

Three structural axes, all trending northwest-southeast, cut across the WSA. South of the Rees anticline, dips are southwest 6 degrees into the Last Chance syncline. Dips between the syncline and the Smoky Mountain anticline are locally to 10 degrees, but usually are somewhat less. To the southwest of the anticline, dips are mostly less than 5 degrees.

Local unconformities are numerous owing to the intertonguing characteristics of the Cretaceous

rocks. Continuous major unconformities exist between important stratigraphic divisions. A major angular unconformity occurs at the top of the Jurassic. The Dakota Sandstone, first of the Cretaceous strata, lies unconformably on this erosion surface. The angularity of the unconformity ranges from 0 to 1 degrees. A second major unconformity occurs between the Smoky Hollow and John Henry Member of the Straight Cliffs Formations. The angularity is slight, less than 1 degree regionally but as high as 7 degrees where fluvial channels cut into the erosional surface.

Soils

Three general soil categories are found within the WSA. They can be described as (1) rock outcrops; (2) plateaus and benches; and (3) terraces and valleys.

Rock outcrops occupy roughly 51 percent of the WSA. They occur as exposed bedrock of shale or siltstone on steep slopes of terraces or on canyon walls. Rock outcrops also occur as badlands on barren hills of exposed bedrock. These areas have highest sediment yields and erosion hazard in the WSA. Plateaus and benches have very shallow to moderately deep fine sands and sandy loams on level to gently sloping surfaces. Plateaus and benches occur on 28 percent of the WSA. Terrace and valley soils are deep fine sands where they occur as dunes and hummocks or elsewhere have loams and fine sands. Occasionally, desert pavement occurs as a gravel surface on these valley and terrace soils that make up 21 percent of the WSA. Table 2 indicates erosion condition for the WSA.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	56,050	91	72,865
Slight	0.6	5,500	9	3,300
Stable	0.3	0	0	0
Total		61,550	100	76,165

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

The major vegetation types currently existing within the WSA are desert shrub and pinyon-juniper. Desert shrub vegetation includes shadscale, blackbrush, and snakeweed. It occupies 33,853 acres or 55 percent of the WSA. The pinyon-juniper vegetation type occupies 24,620 acres or 40 percent of the WSA. The balance of the unit is classified as steep and rocky or as barren (3,077 acres or 5 percent). There are small areas of riparian vegetation in wash bottoms making up less than 1 percent of the vegetation in the WSA.

There are no threatened or endangered plants; however, two species, *Cymopterus higginsii* and *Penstemon atwoodii*, are currently under review for threatened and endangered status (sensitive species). *Cymopterus higginsii* has been found in the Smoky Mountains in the southwest portion of the WSA, and *Penstemon atwoodii* has been found in the northwest portion of the WSA near Pete's Cove at the northern end of Dry Wash.

The Burning Hills WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation type that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

There are no perennial streams in the WSA. The major drainages are Last Chance Creek, Dry Wash, and Warm Creek. They flow in response to thundershower activity common in the July-September period. There are five livestock spring developments in the WSA. Last Chance Creek and its tributaries drain most of the WSA. Warm Creek drains about four sections in the southwest corner of the WSA.

Surface water quality is poor because of high total dissolved solids (TDS), sulfate, and arsenic concentrations. Concentrations of these contaminants render the surface water of Last Chance Creek unsuitable for potable and livestock use.

Ground water quality is considered marginal for livestock consumption.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 3 was assigned to the Burning Hills WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 3.

LEASABLE MINERALS

Oil and Gas

The only oil and gas production in south-central Utah in the vicinity of the WSA comes from the Upper Valley Field located approximately 16 miles to the north. This field was discovered on the Upper Valley anticline in 1964 and stimulated

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil, less than 60 billion cubic feet of natural gas
Uranium	f2	c1	Less than 500 to 1,000 tons of uranium oxide
Coal	f4	c4	928 million tons
Geothermal	f1	c2	None

Source: SAI, 1982.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

drilling activity on similar anticlinal structures in south-central Utah. To date, however, no commercial oil and gas potential has been identified in south-central Utah outside the Upper Valley Field.

No oil and gas wells have been drilled within the WSA. Two wells have been drilled on the Rees Canyon anticline just outside the eastern boundary of the WSA. One of the wells penetrated Cambrian rocks at a total depth of 10,045 feet, and the other penetrated the Mississippian Redwall Limestone at a total depth of 9,017 feet. No oil shows were reported from either well (Kunkel, 1965).

Based on the above discussion, the WSA is assigned an oil and gas favorability rating of f2 (favorable for only small oil and gas fields, i.e., less than 10 million barrels of oil in-place) with a very low certainty of occurrence, c1. Fields of this size in Utah typically have an areal extent of about 2,500 acres and require about 160 acres for developmental facilities.

Under the current land use plan, all 61,550 acres within the WSA are open to oil and gas leasing (Category 1) subject to the standard use and wilderness stipulations. There are presently 63 oil and gas leases covering 54,093 acres. Of these, 16 leases, representing 10,896 acres, were issued prior to October 21, 1976 (pre-FLPMA). The remaining 43,197 acres of leases were issued after October 21, 1976.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than

those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981a). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

A total of 7,457 acres remains unleased for oil and gas.

Coal

The WSA lies in the south-central portion of the Kaiparowits Coal Field, with the entire tract underlain by the coal-bearing Cretaceous Straight Cliffs Formation. Estimated coal reserves within the entire Kaiparowits Coal Field total 15.2 billion tons (Doelling and Graham, 1972).

According to reports prepared by Doelling and Graham (1972) the entire WSA is underlain by minable coal (based on coal seams greater than 4 feet thick) totaling an estimated 928 million tons. It is estimated that 23 million tons occur at depths between 1,000 and 2,000 feet, and 905 million tons occur at depths less than 1,000 feet. Approximately one-third to one-half of the coal is recoverable (Doelling and Graham, 1972).

Results from 67 coal analyses in the western portion of the WSA indicate an average content of 8.5 percent ash, 0.63 percent sulfur, and 12,668 British thermal units (Btu)/lb (Doelling and Graham, 1972). Results from eight coal analyses in the eastern portion of the WSA indicate an average content of 9.8 percent ash, 0.89 percent sulfur, and 10,412 Btu/lb (Doelling and Graham, 1972). Based on the above discussion, the WSA is

assigned a coal favorability rating of high (f4) and a certainty of occurrence rating of high (c4).

The WSA is within the Kaiparowits Known Recoverable Coal Resource Area (KRCRA), which includes the minable coal area. In accordance with the underground mining exemption from the unsuitability criteria (43 CFR 3461.2[a]) none of the area in the KRCRA within the WSA was determined to be unsuitable for mining as a result of the application of the unsuitability criteria (USDI, BLM, 1981a).

There are presently 17 coal leases covering 13,100 acres (approximately 21 percent of the WSA). These leases were issued prior to October 21, 1976. Within the WSA 48,450 acres of the minable coal area remain unleased. The leased area is estimated to contain about 200 million tons of minable coal, or about 22 percent of the minable coal in the WSA. The unleased acreage is estimated to contain about 728 million tons of minable coal or about 78 percent of the minable coal in the WSA.

Any development would probably be by underground methods. It is difficult to determine the specific areas where actual coal operations would occur. It is assumed that access to the coal would be primarily from the north where most of the leased acreage is located and where a roaded area intrudes deep into the WSA. Although vast resources of recoverable coal are indicated or inferred, much more detailed exploration will be required by drilling before large-scale mines can be planned and constructed.

It should be noted that according to SAI (1982), development of Kaiparowits Plateau coal will face significant economic and environmental problems. These problems include poor accessibility, lack of abundant water, high costs of underground mining, and competition from nearby areas where coal is more readily available and of better quality, particularly central Utah, northeast Arizona, and northwest New Mexico.

Geothermal

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks are known to occur within or near the vicinity of the WSA. The nearest thermal spring is approximately 50 miles to the northeast, and it discharges at a temperature of 20 degrees Centigrade (C) (National Oceanic Atmospheric Administration, 1979).

No geothermal resources are known to occur within or near the WSA. Accordingly, the geothermal favorability of the WSA is low (f1) with a certainty of occurrence rating of low (c2).

LOCATABLE MINERALS

According to BLM mining claim records, a total of 23 mining claims (460 acres) are currently located within the WSA. It is not known for which minerals these claims have been located. None are coincident with the favorable uranium area.

Uranium

The following rock units are considered favorable for uranium in south-central Utah (U.S. DOE, 1979): the basal members and Petrified Forest Member of the Triassic Chinle Formation and the Salt Wash Member of the Jurassic Morrison Formation. The Morrison Formation is perhaps 100 to 200 feet thick in the vicinity of the WSA and it thickens rapidly to the east. According to SAI (1982), the Morrison has been removed by pre-Dakota erosion a short distance west of the WSA. Throughout most of the tract, the Morrison lies at a depth of about 1,500 feet. The Chinle Formation lies at depths generally exceeding 4,000 feet (Hintze, 1973).

According to Bendix (1978), both the Chinle and Morrison Formations are relatively unfavorable uranium host rocks in the Kaiparowits Plateau region. This conclusion was based largely on the high sandstone-to-mudstone ratios, the lack of organic matter, and the wide lateral continuity of the sandstones, especially in the Morrison Formation. Bendix points out that, although the paucity of mudstones in the Morrison does not preclude uranium mineralization, deposits found in similar environments nearby, such as the Henry and Carrizo Mountains, tend to be small and highly localized. Small deposits of this type are economical to extract only when exposed in outcrops or when closely grouped.

According to the U.S. DOE (1983) approximately 1,900 acres within the WSA are favorable for the occurrence of uranium. This area is identified as the Morrison Formation favorable area. (Favorable areas are defined by the U.S. DOE [1983]) as geographic areas in which the available data indicate the existence of geologic environments favorable for the concentration of uranium.) The remainder of the WSA is not considered favorable for the occurrence of uranium.

Based on the above discussion, the Morrison Formation favorable area within the WSA is assigned a favorability rating of f2 and a certainty

BURNING HILLS WSA

of occurrence rating of c1. An f2 rating refers to potential resources of less than 500 tons of uranium oxide. The areal extent of such a deposit (based on a maximum size of 500 tons of uranium oxide, a minimum grade of 0.01 percent, and an average thickness of 18 feet for the host rock) is estimated to be no more than 100 acres. However, actual development operations for an ore body would be by underground methods and would involve very little surface area. Portal locations would depend on the location of the deposit. Developmental drilling, especially for detailed delineation of an ore body, could require significantly more surface area than actual mining operations. The amount of drilling required would depend largely on the size and complexity of the ore body.

No other locatable minerals are known to occur within the WSA.

Wildlife

The Burning Hills WSA contains two distinct habitat types: pinyon-juniper and desert shrub. Each of these habitat types supports a unique complement of animal species and, theoretically, maximum species composition would vary from a high of 118 birds, 18 mammals, and 18 reptiles, to a low of 15 birds, 11 mammals, and 15 reptiles. Thirteen species of raptors are known to, or suspected of, nesting in the WSA. No fish exist in the WSA. About 6,400 acres of land were identified in the *Kanab-Escalante Grazing Management EIS* (USDI, BLM, 1980a) as crucial deer winter range.

Approximately 3,000 acres of wildlife land treatment potential and one guzzler (spring) are proposed for the WSA. Game species in the WSA are mule deer, cougar, cottontail rabbits, mourning doves, blue grouse, bandtailed pigeons, and chuckar. Mule deer are primarily winter residents as a result of altitudinal migrations from the higher bench areas.

Small numbers of cougar are yearlong residents of the WSA. Cottontails occur throughout the WSA, and mourning doves are fairly common throughout the WSA from May to September. Blue grouse and bandtailed pigeons are found in the higher elevations of Dry Wash and Reese Canyons. Chuckar are found near Croton Bench and Collet Canyon.

Approximately 32 desert bighorn sheep were transplanted into the Rock Creek area of Glen Canyon NRA in 1981 and 1982 by the Utah Division of Wildlife Resources (UDWR). As the herd

size increases, it is likely that a few sheep will move into the WSA. About 60 percent of the unit is potential bighorn sheep habitat.

Two endangered species, the peregrine falcon and bald eagle, are present along Lake Powell and can be expected to migrate through the WSA. The UDWR's (1982) list of sensitive species includes three species that occur in the WSA: Lewis woodpecker and the western and mountain bluebirds.

Forest Resources

Forest resources in the WSA are associated with the pinyon pine and juniper vegetation type that occurs in the WSA. The WSA is open to fuelwood collecting but, due to limited access and the remoteness of the area, use is minimal and undoubtedly will continue to be so.

Livestock and Wild Horses/Burros

The WSA contains portions of three livestock grazing (cattle) allotments. Table 4 summarizes livestock grazing use data in the WSA. There are 962 AUMs within the WSA. About 24,847 acres are suitable for grazing with approximately 36,703 acres being unsuitable. At the present there are five spring developments located within the WSA.

TABLE 4
Livestock Grazing Use Data

	Allotment			Total
	Headwaters	Upper Warm Creek	Last Chance-Paria	
Total Acres	249,059	68,265	178,204	
Acres in WSA	3,608	3,264	54,678	61,550
Suitable Acres in WSA ¹	366	744	23,737	24,847
Unsuitable Acres in WSA ¹	3,242	2,520	30,941	36,703
AUM Grazing Preference in WSA	13	324	625	962
Livestock Permittes Using WSA	21	2	1	24
Existing Improvements	2 Springs		3 Springs	
Proposed Improvements	2.25-Mile Fence, Cattleguard	25-Mile Fence, Cattleguard	872-Acre Seeding, 3 Wells, 3 Cattleguards, 1-Mile Trail, 1 Catchment, .75-Mile Fence	

¹ The suitability of an area for grazing is determined by a number of factors including steepness of terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available feed is not allocated for domestic livestock grazing.

Source: USDI, BLM, 1979a.

BURNING HILLS WSA

Eight hundred seventy-two acres of seeding, 3.25 miles of fence, five cattleguards, three wells, one spring development, one catchment, and 1 mile of trail are proposed for development in the WSA under the present Allotment Management Plan. The land treatment (872 acres of seeding) would provide 100 AUMs of forage. The projects were identified to better distribute livestock grazing in the allotments. Vehicles are not generally used for livestock management in this WSA.

There are no wild horses or burros within the WSA.

Visual Resources

The WSA has a variety of landscape characters. The BLM visual resource inventory classified approximately 15,690 acres as Class A quality scenery, 43,550 acres as Class B, and 2,310 acres as Class C.

The VRM management class acres for the unit are about 6,000 acres (10 percent) of Class II, 15,000 acres (24 percent) of Class III, and 40,550 acres (66 percent) Class IV. (Refer to Appendix 7 for more information on BLM's VRM system.)

Cultural Resources

The Southern Utah Coal Project archaeological survey (USDI, BLM, 1978) has provided a Class I inventory for the Paria Planning Unit that includes the Burning Hills WSA. Two sites were identified in the unit. There are no National Register sites in the WSA.

Recreation

The Burning Hills WSA offers limited recreational opportunities. Sightseeing associated with back-country vehicle travel is the major recreational use. Some dayhiking associated with exploration occurs in the unit. It is estimated that the unit receives less than 100 visitor days per year. Ninety percent is associated with vehicle use.

The natural coal fires that occurred in the unit have left behind colorful rocks. The most noted is the Burning Hills area in the southeast portion of the WSA.

ORV use is confined to existing roads and trails on approximately 10,000 acres in the Last Chance drainage. The remainder of the unit is open to ORV use. Due to the topography and the remote location of the WSA, ORV use is practically nonexistent.

Wilderness Values

SIZE

The WSA contains 61,550 acres and is approximately 4 miles long (north to south) and 2.25 miles wide (east to west).

NATURALNESS

Although the WSA is essentially in a natural condition, some substantially unnoticeable human imprints can be found in the unit. These imprints include: drill pads and access ways on Dry Bench and in the upper Reese Canyon drainage, a cabin in Drip Tank Canyon, ways in Reese Canyon below Surprise Valley, an abandoned stock tank and other equipment in Reese Canyon, a trailer and old corral in Last Chance Creek at the mouth of Reese Canyon, and ways in the Burning Hills west of Navajo Canyon. These imprints are considered substantially unnoticeable in the area as a whole. These imprints, when combined, involve less than 1 percent of the WSA. Lack of access has preserved the WSA's naturalness.

In the Burning Hills WSA, the high quality of naturalness has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b) decision. No additional imprints have occurred in the WSA as a result of impairing uses or activities allowed under the BLM's *Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

The size and configuration of the WSA, in combination with topographic and vegetation screening, support opportunities for outstanding solitude.

In Dry Wash Canyon, Last Chance Creek Canyon, and the extreme upper portion of Reese Canyon solitude is present because of a combination of topographic and riparian vegetation screening.

Located between the canyons noted above are two benches, Window Sash Bench and Dry Bench. An outstanding opportunity for solitude can also be found in these areas due to the size of the bench areas and the extensive pinyon-juniper forest which provides vegetation screening.

A system of canyons with no intervening benches is present in the area south of Smoke Hollow. Although the individual canyons retain their identity, the entire canyon system assumes the shape of an escarpment. The effect of this configuration on the solitude opportunity is to concentrate and enhance the topographic screening factor. The influence of this interrelationship is sufficient to make the opportunity outstanding in this area.

BURNING HILLS WSA

Areas within the unit that lack both vegetation and topographic screening are not considered to have an outstanding opportunity for solitude. Such areas are commonly found on outward-facing slopes that have a desert shrub vegetation cover.

The sights and sounds of human activities are not present from a number of places within the WSA. It would be easy for a visitor to find seclusion in a good share of the unit.

In summary, about 45 percent (27,700 acres) of the WSA meets the solitude criterion for areas under wilderness review.

PRIMITIVE AND UNCONFINED RECREATION

There are no outstanding opportunities for primitive or unconfined recreation within the WSA.

SPECIAL FEATURES

No scientific values were identified within the WSA.

The *BLM Intensive Wilderness Inventory* concluded that the Burning Hills area within the WSA represents an educational area depicting the geological changes that have resulted over the ages from naturally occurring coal fires. Approximately 13,000 acres of the Burning Hills are within the unit.

The Burning Hills within the unit also represent a scenic area. The red colorations in the landscape are the result of geological changes attributed to the naturally occurring coal fires. Scenic values are also present in the lower Last Chance Creek Canyon area below Smoky Mountain. The escarpment at the tip of Smoky Mountain exhibits the same colorations as the Burning Hills. This landscape includes the badlands areas at the foot of the cliffs on the Glen Canyon NRA boundary. Approximately 27,500 acres possess scenic values.

Two storage cist ruins exist in the northeastern portion of the WSA. No scientific values have been identified in association with the ruins. Because of their visibility and location, some historical value can be attached to the storage cists.

Land Use Plans and Controls

The WSA lies almost entirely within the BLM Paria Planning Unit which is being managed under the land use decisions of the Paria MFP (USDI, BLM, 1981b). The present principal use within the WSA is livestock grazing.

The WSA encloses about 3,839.72 acres of State land within its boundaries. State lands are managed by the State Land Board for the purpose of generating revenues for the public school system. As part of Project BOLD the State of Utah proposed to acquire through exchange about 3 percent of the Federal lands within the WSA.

The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple use concept." Glen Canyon NRA forms the southeastern boundary of the unit. In the *Glen Canyon Management Plan* (USDI, National Park Service [NPS], 1979), the area adjacent to this unit was not recommended for wilderness designation.

Socioeconomics

DEMOGRAPHICS

The Burning Hills WSA is located in Kane County, Utah. Kane County is a rural county with a 1980 population of 4,024 persons, most of whom are concentrated in small communities. The average population density is approximately one person per square mile. This density is very low when compared to the Statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981).

EMPLOYMENT

The dominant sectors, in terms of employment, in the Kane County economy are retail trade (17 percent), government (17 percent), and services (14 percent) (USDC, Bureau of Economic Analysis, 1982). The strength of the retail trade sector reflects the importance of tourism to the Kane County economy. Table 5 presents employment and personal income estimates for the county.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral exploration, mineral leasing, livestock production, and recreation. Table 6 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 5
Employment and Personal Income
Kane County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	1,452	12,595
Proprietors	382	2,623
Farm Proprietors	122	136
Nonfarm Proprietors	260	2,487
By Industry Source	—	—
Farm	27	382
Nonfarm	1,043	12,213
Private	798	9,614
Ag. Serv., For., Fish., and Other	(L)	0
Mining	17	196
Construction	51	1,544
Manufacturing	70	566
Nondurable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	150	1,875
Wholesale Trade	12	230
Retail Trade	252	2,364
Finance, Insurance, and Real Estate	39	392
Services	202	2,427
Government and Government Enterprises	245	2,599
Federal, Civilian	18	252
Federal, Military	30	78
State and Local	197	2,269

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

TABLE 6
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	\$162,279
Coal Leases	None	\$39,300
Mining Claim Assessment	Less than \$ 2,300	None
Livestock Grazing	\$19,240	\$ 1,347
Recreational Use	Less than \$ 410	None
Total	Less than \$21,950	Up to \$202,926

Sources: USDI, BLM, 1979a; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

The WSA has 23 mining claims; regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. The geophysical exploration which has been conducted in the WSA has generated some temporary local employment and income. No significant oil and gas or mineral exploration or production has

occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed significantly to local employment or income.

Twenty-four livestock operators have a total grazing privilege of 962 AUMs within the WSA. If all this forage were utilized, it would account for \$19,240 of livestock sales and \$4,810 of ranchers' returns to labor and investment.

Some woodland products have been harvested from the WSA; however, the harvests were small and were insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA's nonmotorized recreational use and related local expenditures are low. The WSA's motorized recreational use and related local expenditures are also low. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Burning Hills WSA is estimated as about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Kane County.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 6).

Sixty-three leases in the WSA cover approximately 54,093 acres. At \$3 per acre, lease rental fees generate up to \$162,279 of Federal revenues annually. There are also 17 coal leases covering 13,100 acres in the WSA and they generate up to \$39,300 annually in revenue. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 962 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$1,347 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for all Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable energy resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

(Proposed Action)

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and coal exploration and development. The area would be partially open to ORV use, grazing, mining, motorized hunting, predator control, and fire,

insect, and noxious weed control. The degree of future development is unknown but would probably be low due to the unit's rough terrain and low resource potential. However, there is a high potential for coal development in the long term. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: coal, 3,080 acres; oil and gas, 160 acres; and uranium, 20 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) There would also be 3,872 acres of land treatment for wildlife and live-stock purposes. The 3,872-acre figure is used for analysis purposes but the probability of such extensive land treatment is low.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If oil and gas, coal, and uranium are developed, air quality could be reduced up to the PSD Class II limitations. Disturbance of 3,260 acres due to mineral activities would result in increases in fugitive dust emissions. The amount of emissions and their significance would depend on the location and duration of the disturbance. The proposed land treatment of 3,872 acres could cause a temporary increase of fugitive dust. However, after new seedings were established, air quality would be improved.

GEOLOGY

No major impacts to geology are expected from 180 acres of disturbances associated with uranium and oil and gas exploration. Some subsidence and fracturing of geologic formation could occur with coal development; however, the extent is unknown.

SOILS

It is estimated that up to 3,260 acres of soil could be disturbed by mineral and energy exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 3,260 acres would increase from 4,238 cubic yards/year to 8,802 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 4,564 cubic yards (6 percent) over

current annual soil loss. This small increase and its effects would likely be imperceptible.

The proposed land treatments on 3,872 acres could cause a temporary increase in soil loss but, in the long term, soil erosion would be expected to be reduced from the current levels.

VEGETATION

The anticipated maximum of 3,260 acres disturbed by mineral-related activities would not significantly impact the WSA's sparse vegetation. The 3,872 acres of vegetation treatments would change the pinyon-juniper to a grassland-brush type.

Two sensitive plant species (*Penstemon atwoodii* and *Cymopterus higginsii*) are found within or near the WSA. Before authorizing surface-disturbing activities (7,132 acres potential from mineral activity and land treatments) the BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, the BLM would initiate consultation with the Fish and Wildlife Service (FWS) as required by BLM policy. The BLM would request a biological opinion when appropriate (refer to Appendix 4). Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of threatened, endangered, or sensitive plant species would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in TDS is expected to occur from the 4,564 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Paria Planning Unit.

The proposed land treatments of 3,872 acres could cause temporary (2 to 3 years) increases in TDS. However, after the new seedlings are established water quality could be expected to improve.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and with the exception of coal mining, would not significantly impact ground water quality or quantity and flow of ground water. The impact of coal mining on ground water would be partially mitigated by constraints on developments required by State laws.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. Industry, however, recognizes the WSA as having a moderate potential for economic accumulations of hydrocarbons. The degree of future development is unknown but would probably be low due to the small size of the deposits.

Coal

An estimated coal resource of 928 million tons of minable coal is found within the WSA. This resource could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that up to 3,080 acres of surface disturbance would occur from coal development. The likelihood for production of coal is thought to be low in the near future due to transportation costs and existence of more competitive coal-producing areas; however, there is a high potential for development in the long term.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposit of up to 500 tons of uranium oxide could be developed. Approximately 20 acres could be disturbed due to exploration and development of this locatable mineral resource. Twenty-three mining claims (460 acres) exist within the WSA. The degree of future development is unknown but would probably be minimal due to economic considerations (e.g., transportation costs, low potential, etc.) and the depth to the potential uranium bearing formation.

WILDLIFE

Under this alternative, wildlife could be affected by an increase in forage from the proposed 3,000 acres of land treatment and seedlings. The new forage could increase wildlife numbers and improve the condition of existing animals. The availability of water through the construction of

water catchments, reservoirs, and the improvement and maintenance of springs would also improve wildlife habitat. Desert bighorn sheep may migrate into the area and become established near isolated water sources. However, disturbance of an estimated 3,260 acres through mineral and energy exploration and development would disrupt wildlife. Deer and mobile nongame animals would be dispersed from the area of disturbance for the lifetime of these activities. Desert bighorn sheep would avoid the area. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. The endangered peregrine falcon and bald eagle and the sensitive Lewis woodpecker and western and mountain bluebirds would also avoid the disturbed areas.

FOREST RESOURCES

Since there are few trees other than pinyon and juniper, none of which are utilized (except by occasional campers or hikers), the anticipated surface-disturbing activities would not affect forest resources. The entire area would remain open to fuelwood collecting.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Paria Planning Unit MFP. The 962 AUMs currently allocated in the WSA are controlled by 24 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Motorized vehicles could continue to be used to manage livestock. The 872 acres of land treatment, five cattleguards, three wells, one spring development, one catchment, 3.25 miles of fence, and 1 mile of trail proposed could be developed and would result in improved livestock distribution and an increased carrying capacity of 100 AUMs. Additional roads or other facilities could be developed without regard for wilderness values.

VISUAL RESOURCES

Under this alternative, 3,872 acres of vegetation manipulation would occur and 3,260 acres of mineral-related exploration and development is possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in VRM Class II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular

ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

Cultural values in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 7,132 acres by mineral exploration and development and land treatments under this alternative could affect potential National Register sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts.

Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

The quality of users' primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative, 3,872 acres of vegetation manipulation would occur and mineral-related exploration and development activities are possible on 3,260 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities (none of which are outstanding) could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 100 current visitor days per year to 150 visitor days at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 10 visitor days per year to about 15 visitor days per year over the next 20 years. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing

etc.) would increase from 90 visitor days per year to 135 visitor days.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Paria Planning Unit MFP. However, under this alternative, 3,872 acres of vegetation manipulation could occur and 3,260 acres of mineral exploration and development are possible. The related surface disturbance would result in a significant loss of naturalness and solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for coal development and related disturbance is low in the near future, but high in the long term.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Kane County Master Plan* which recommends multiple use. This alternative is based on implementation of the current BLM Paria Planning Unit MFP and is, therefore, in conformance with it. The No Action Alternative would also be consistent with State of Utah plans and policies that emphasize economic return. If Project BOLD is implemented approximately 3 percent of the WSA would be transferred to State ownership.

SOCIOECONOMICS

Under this alternative, no changes are expected in existing patterns and trends of population, employment, and local income distributions. Economic development of resources in the WSA would not be affected.

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the oil and gas, coal, and uranium in the WSA were developed it would lead to a significant increase in employment and income for Kane County. The probability of economic development of coal within the WSA is high in the long term (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (962 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The proposed 872 acres of land treatment for livestock and water developments could produce 100 AUMs of new allocated forage and lead to \$2,000 of livestock sales and \$500 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is estimated to increase only 50 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 7,457 acres in the WSA open to oil and gas leases that are currently not leased. If leased they would bring up to \$22,371 additional Federal lease fee revenues per year. In addition there are 48,450 acres unleased for coal resources that could be leased. If leased this land could bring up to \$145,350 of increased revenue to the Federal government. Half of these monies would be allocated to the State, a portion of which could reach the local economy.

Collection of livestock grazing fees (\$1,347 per year) would continue. The additional 100 AUMs of forage that would be produced by proposed new range improvements and allocated to livestock under this alternative would increase Federal revenues by \$140 annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (61,550 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 61,550-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 11 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that existing mining claims or new mining claims would be staked before wilderness designation and would be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would

expire before production of commercial quantities and that coal leases would expire before diligent development requirements are met. Oil and gas leases would not be renewed and future leasing of oil and gas or coal would not be allowed. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates for the WSA.) The 3,872 acres of land treatment for wildlife and livestock purposes would not be allowed.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (20 vs. 7,132 acres [3,260 from mineral activity and 3,872 from land treatments]), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant. Wilderness designation would provide additional protection to the resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could not occur unless they could be developed in a manner nonimpairing to wilderness. It is assumed that the proposed spring, catchment, and three wells could be developed to meet wilderness protection criteria.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and these activities would not significantly impact ground water; therefore, it would not significantly impact the area's ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 54,093 acres (10,896 acres pre-FLPMA and 43,197 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

Existing pre-FLPMA and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place

and less than 60 billion cubic feet of natural gas with 3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Coal

The WSA has an estimated coal reserve of 928 million tons of which 464 million tons are recoverable. Only a small part of the coal reserve is presently under lease (approximately 21 percent). Therefore, wilderness designation would preclude development of 79 percent of the WSA's coal resource, or an estimated 375 million tons of recoverable coal. The 13,100-acre coal lease could be developed. However, due to the economic and water problems associated with development, it is unlikely that the diligent requirements in these leases will be met before they expire.

It is concluded, therefore, that recovery of approximately 464 million tons of recoverable coal would be foregone.

Locatable Minerals

Approximately 460 acres are under mining claim within the WSA, principally for uranium. Up to 500 tons of uranium oxide in-place is predicted to occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 20 acres could be disturbed due to exploration and development of locatable mineral resources. The worst-case impact to minerals would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case the potential for recovery of up to 500 tons of uranium oxide would be foregone. Because production of this metal is not currently occurring and because economic considerations (e.g., transportation, low potential, market price, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of uranium oxide.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However, the

3,000-acre proposed land treatment would be foregone. Loss of the land treatment proposal would reduce the likelihood of expanding and improving the deer herd and nongame species within the WSA. It is assumed that the proposed spring, catchment and three wells could be developed to meet wilderness protection criteria. However, if future water improvements were curtailed and the proposed water developments were not constructed, potential habitat for deer and nongame species would be reduced. Desert bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water. Bald eagle and peregrine falcon are endangered and may occasionally occur within the WSA. Wilderness designation would have no significant impact on these species or on three sensitive bird species in the WSA.

The disturbance due to exploration and development of locatable mineral resources (20 acres) could disrupt wildlife populations and result in these species leaving the disturbed areas.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Paria Planning Unit MFP. The 962 AUMs currently allocated in the WSA are controlled by 24 livestock permittees. Since motorized vehicles are generally not used to manage livestock, wilderness designation would have no adverse effect on the management of livestock grazing. The proposed 872 acres of land treatment would not be allowed. Which, if any, of the other proposed developments would be allowed is unknown. It is assumed that all but the land treatment could meet wilderness protection criteria.

Existing rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I, which generally allows for only natural ecological change, through continuation of

the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative the disturbance from 3,872 acres of planned vegetation manipulation would not occur and the possible mineral-related surface disturbance would be reduced from 3,260 acres to 20 acres. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on 20 acres. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims could not be denied (worst-case analysis), VRM Class I objectives may not be met on large portions of the WSA. Because the potential for development of mining claims is low and only 20 acres of surface disturbance would occur with development, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. The 90 visitor days of ORV play activity and/or vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA. Because there are other similar areas in the vicinity of the WSA, ORV-associated recreation use would probably not experience an overall decline in the vicinity of the WSA. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for locatable

mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

Little impact on ORV recreational use would be expected due to the general lack of such activity in the area. However, approximately 11 miles of ways within the WSA would be closed to ORV use.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values.

WILDERNESS VALUES

Designation and management of all 61,550 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude (27,700 acres). The unit does not possess outstanding opportunities for primitive and unconfined recreation. The special features in this WSA would be protected and preserved.

Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. However, because the potential for locatable mineral production is low, the potential for disturbance is only 20 acres, and mitigation would be imposed to protect wilderness values, loss of these values under wilderness designation would be less likely than under the No Action Alternative.

LAND USE PLANS AND CONTROLS

The existing Paria Planning Unit MFP does not provide for wilderness designation, and designation of the WSA as wilderness would be an amendment to the MFP.

The *Kane County Master Plan* supports the total concept of multiple use of lands, including the Burning Hills WSA. This alternative would not totally conflict with the multiple-use concept, however, since some existing resource uses would continue, although under more restrictive conditions. Designation would conflict with the county's plans because oil and gas and coal leases would expire and future leasing and location of minerals would not be allowed.

If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation

would not conflict with the policy of the State of Utah to maximize economic returns but would conflict with Project BOLD.

SOCIOECONOMICS

Overall there would be no immediate significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 6) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for coal development in the WSA is high in the long term (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas and coal leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for coal development is high in the long term, it is estimated that potential mineral-related local income would be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$19,240 of livestock sales and \$4,810 of ranchers' return to labor and investment. Proposed land treatments for livestock would be foregone along with any resulting increase in ranchers' income. If these treatments were to be implemented and the additional forage used, ranchers' returns to labor and investment would increase by \$500 annually.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would not be significant. Motorized recreational use of the WSA is light (90 visitor days per year). The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 54,093 acres now leased for oil and gas and 13,100 acres for coal would cause an eventual loss of up to \$201,579 per year of lease fees to the

BURNING HILLS WSA

Federal Treasury. There would also be a potential loss of \$167,721 annually in Federal revenues from the 7,457 acres for oil and gas and 48,450 acres for coal that could be leased without designation. In addition to these rental fees, any potential royalties from lease production and bonus bid

revenues from new coal leases could also be foregone.

If the proposed range improvements are not developed and used, an estimated annual \$140 of Federal grazing revenues from a 100 AUM increase would be foregone.

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Death Ridge WSA



DEATH RIDGE WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	3
Alternatives Considered and Eliminated from Detailed Study	3
Alternatives Analyzed	3
No Action Alternative (Proposed Action)	3
All Wilderness Alternative	5
Summary of Environmental Consequences	8
AFFECTED ENVIRONMENT	8
Air Quality	8
Geology	8
Soils	8
Vegetation	10
Water Resources	10
Mineral and Energy Resources	10
Wildlife	13
Forest Resources	14
Livestock and Wild Horses/Burros	14
Visual Resources	14
Cultural Resources	14
Recreation	15
Wilderness Values	15
Land Use Plans and Controls	16
Socioeconomics	16
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	18
Analysis Assumptions and Guidelines for All Alternatives	18
No Action Alternative (Proposed Action)	18
All Wilderness Alternative	21
BIBLIOGRAPHY	25

DEATH RIDGE WSA

(UT-040-078)

INTRODUCTION

General Description of the Area

The Death Ridge Wilderness Study Area (WSA) lies on the Kaiparowits Plateau, 10 miles south of the Town of Escalante, Utah. The unit generally lies between the Horse Mountain and Collet Top roads in Garfield and Kane Counties. Approximately 22,500 acres are within Garfield County and 40,370 acres are within Kane County. The WSA is managed by the Escalante and Kanab Resource Areas in the BLM Cedar City District. The WSA contains 62,870 acres of public land and encloses 3,840 acres of State land.

The major drainages within the unit include the Escalante, Paradise, and Right Hand Collet Canyons. The WSA is characterized by benches cut by canyons and narrow ridges. The vegetation type is predominantly pinyon juniper. Scattered areas of sagebrush and isolated communities of oak and ponderosa pine also occur within the WSA.

In general, the climate is temperate and arid with annual precipitation averaging about 10 to 15 inches. From June through early September, convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation occurs primarily from November through March. The frost-free period is approximately 100 days.

Summer temperatures in Escalante, Utah range approximately 30 degrees Fahrenheit (F) with highs in the mid 90s and lows in the mid 60s. Winters in Escalante, Utah have a temperature range of about 27 degrees F with highs in the low 40s and lows of about 15 degrees F. Snowfall in Escalante averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified in Scoping

General issues pertaining to the WSAs in the Escalante and Kanab Resource Areas are discussed in Volume I. Several concerns pertaining to the wilderness study process and/or the environmental analysis process were raised during scoping. These concerns are discussed in the Scoping section of Volume 1 rather than in analyses for individual WSAs. Specific issues pertaining to the Death Ridge WSA identified through formal public scoping (USDI, BLM, 1984) are as follows:

1. *Comment:* The occurrence of the sensitive plant species *Penstemon atwoodii* and *Xylorhiza cronquistii* in or near this WSA should be considered in the decisionmaking process.

Response: The sensitive plant species *Penstemon atwoodii* and *Xylorhiza cronquistii* are discussed in the Vegetation sections of this document.

2. *Comment:* Can the coal beneath the Kaiparowits Plateau be extracted and transported from the region profitably? Are better opportunities for coal development available on other lands?

Response: It is uncertain whether or not coal from the Kaiparowits Plateau can be mined and transported economically. This would depend on many market and technological factors. Large-scale operations could be economical and the analysis in this document assumes that some development would occur. Central Utah has historically provided more opportunities for coal development because of its proximity to established transportation corridors.

3. *Comment:* Coal extraction is economically questionable and environmentally controversial. Would oil and gas extraction be economically feasible? Would extraction be done under nonimpairment criteria?

Response: Oil and gas extraction would be economically feasible in sufficient quantities. Extraction would be accomplished under stipulations issued at the time of leasing on pre-FLPMA (Federal Land Policy and Management Act) leases and under nonimpairment standards if the leases are post-FLPMA.

4. *Comment:* The Site-Specific Analysis (SSA) should provide a map showing the locations of oil, gas, and coal leases.



DEATH RIDGE WSA

Response: The Environmental Impact Statement (EIS) is, of necessity, a summary of a large amount of technical data. If more information on the location of leases is needed, maps of these leases are available at the BLM Cedar City District Office.

5. *Comment:* Could underground coal mining methods be used?

Response: The coal in the Death Ridge WSA could be mined by underground methods.

6. *Comment:* Land use conflicts as a result of wilderness designation should be discussed.

Response: Land use conflicts are discussed under the Environmental Consequences, Land Use Plans and Controls section of this document.

7. *Comment:* Would wilderness designation be consistent with local and State land use planning?

Response: According to the *Garfield County Master Plan* (Five County Association of Governments, 1984), the county supports the concept of multiple use, but county officials and residents realize the need for protection of specific areas that should receive wilderness designation, of which Death Ridge is not included. The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) supports the concept of multiple use of lands. If State land within the WSA is exchanged for lands outside the WSA, wilderness designation would not conflict with State policy and plans.

8. *Comment:* What local economic effects would wilderness designation create?

Response: The effects of wilderness designation are analyzed in the Environmental Consequences section of this document.

9. *Comment:* Why are pre- and post-FLPMA leases incompatible with wilderness management when nonimpairment criteria can be applied to both (10th Circuit Court Rocky Mountain Oil and Gas Association decision) and development is only a speculative assumption?

Response: Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases. Pre-FLPMA leases are gov-

erned by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development. Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981c). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA. Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

10. *Comments:* (1) Identified potential transportation corridors should have weight equivalent to the value of the coal reserves. (2) If mineral resources affect wilderness suitability, there should be a detailed explanation of how decisions were made and differing values weighed. (3) Wilderness designation should include a national as well as local perspective.

Response: At the conclusion of the EIS process, BLM will review and consider all of the information received and at the time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy," and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

11. *Comment:* Post inventory "cherry-stemming" of roads and gerrymandering of WSA boundaries and acreages are not allowed.

Response: No adjustments were made to the Death Ridge WSA during the study phase.

12. *Comment:* The SSA indicates that about 50 percent of the area possesses out-

standing opportunities for solitude, yet the technical report indicates only about 600 acres (1 percent).

Response: Approximately 50 percent of the WSA has outstanding opportunities for solitude as indicated in this document.

13. *Comment:* The SSA found 50 percent of the area possessed outstanding opportunities for solitude yet indicated wilderness values are less valuable or unimportant; at what percent are values important?

Response: BLM's inventory decision (upheld by IBLA) is that approximately half of the WSA has outstanding opportunities for solitude and that the area does not have any outstanding opportunities for primitive and unconfined recreation. These values, plus other resource values within the WSA, are considered when determining importance of a resource.

14. *Comment:* The SSA indicates only the peninsula between Right Hand Collet and Escalante Canyon has outstanding solitude opportunities; yet the BLM found in the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b) that the area met WSA standards; therefore, it must possess outstanding opportunities.

Response: A roadless area is required to possess only one outstanding opportunity to qualify as a WSA (USDI, BLM, 1982b).

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

No alternatives were identified for this WSA during scoping other than those analyzed.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (62,870 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE (PROPOSED ACTION)

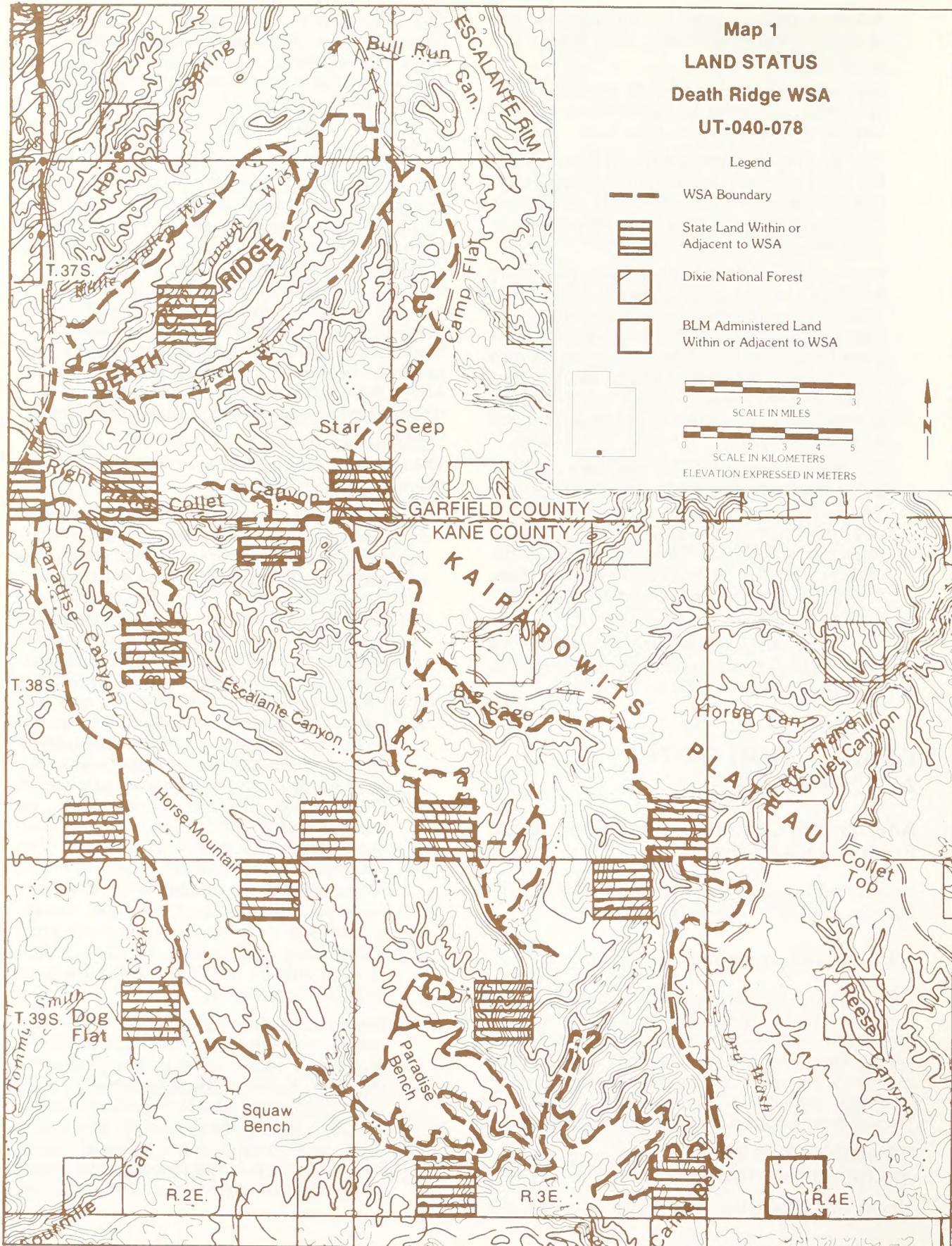
Under this alternative, none of the 62,870-acre

Death Ridge WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Escalante and Paria Planning Unit Management Framework Plans (MFPs) (USDI, BLM, 1981a and 1981b). The 5,592 acres of State land within the WSA (refer to Map 1) have not been identified in the MFPs for special Federal acquisition through exchange or purchase. About three-fourths of the Federal land in the WSA have been identified by the State of Utah for exchange to State ownership under the Project BOLD proposal (refer to Volume I); under the No Action Alternative, it is assumed that this transfer of ownership would be allowed should the State's proposal be enacted by Congress. Inasmuch as the Project BOLD proposal has not yet been approved, the description of the No Action Alternative for this WSA is based on continued Federal land ownership and BLM administration.

The following are specific actions that would take place under this alternative:

- All 62,870 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on potential future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809), without consideration for wilderness values. No mining claims now exist. Existing oil and gas leases (83 leases totalling 53,810 acres) could be developed under Category 1 (standard stipulations) without concern for wilderness values. The balance of the WSA (9,060 acres) could be offered for new oil and gas leases under Category 1. Existing coal leases (18 leases covering 21,096 acres) and future new coal leases on 41,774 acres could be developed without wilderness considerations. If all coal leasing criteria are met, four existing Preference Right Lease Applications (PRLAs) (17,005 acres) could be approved without wilderness considerations.
- Domestic livestock grazing use of the WSA would continue as authorized in the MFPs (currently 450 Animal Unit Months [AUMs]). Existing developments for livestock (including a total of 6 miles of pipeline, one spring development, two reservoirs, two troughs, and 2 miles of fence) identified in the management plans would continue to be maintained. The proposed

DEATH RIDGE WSA



range improvements, 1 mile of fence and 1,100 acres of seeding proposed in the *Kanab-Escalante Grazing Management EIS* (USDI, BLM, 1980a), would be allowed.

- Use, maintenance, and development of facilities and improvements for wildlife, water resources, etc. could be allowed if in conformance with the MFP. None are currently planned.
- The entire WSA acreage would continue to be open to off-road vehicle (ORV) use; however, due to topography and remote location, the actual ORV use is low and is generally limited to roads and ways established for mineral exploration.
- The entire 62,870-acre area would be open to woodland product harvest. There has been some noncommercial harvest of forest products (Christmas trees and pine nuts).
- The entire area would continue to be managed under Visual Resource Management (VRM) Class IV.
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 62,870 acres of the Death Ridge WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). The area would be managed in accordance with the BLM "Wilderness Management Policy" to preserve its wilderness character. Upon designation, acquisition of about 8-2/3 sections of State land (5,591 acres) within or adjacent to the WSA (refer to Map 1) would be likely and could be authorized by purchase or exchange. Two of these State sec-

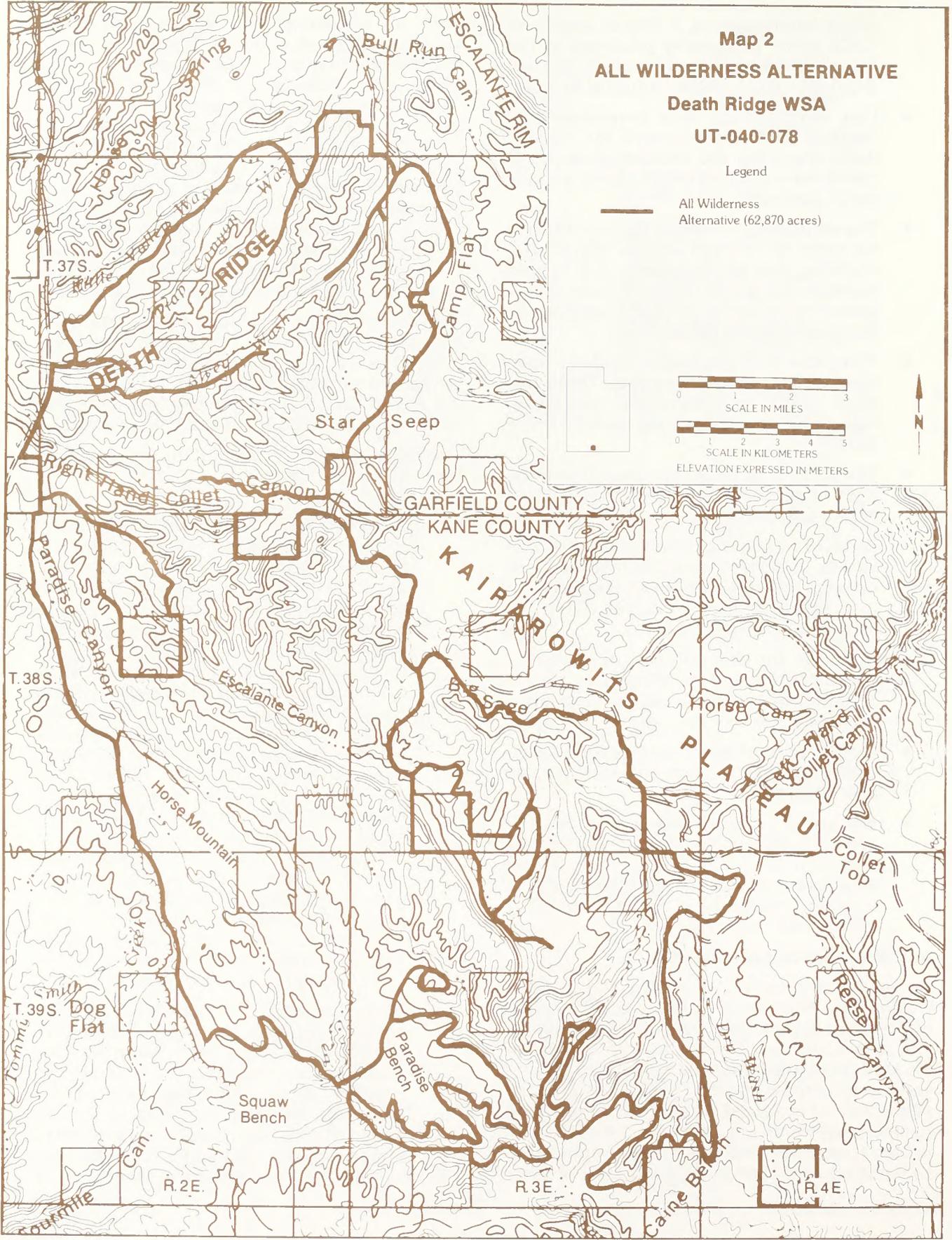
tions are in-holdings with access provided by existing roads that would be "cherry-stemmed;" the fraction of a section is bordered on 3-1/2 sides by the WSA; however, the State has identified these lands in its request for wilderness exchange. Six other State sections adjacent to the WSA likely would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

It is assumed that under the All Wilderness Alternative the lands identified for exchange to State ownership (about 5,592 acres) would be deleted (or shifted to allocation outside the WSA) from the Project BOLD proposal and that the entire WSA would be managed in Federal ownership.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 62,870 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting of mining claims would be allowed on any valid claims located prior to wilderness designation. It is assumed that some mining claims may be located prior to designation; however, none currently exist. Existing oil and gas leases involving about 53,810 acres would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown. No new oil and gas leases would be issued. It is assumed that existing coal leases (18 leases on 21,096 acres) would be terminated if diligent development criteria are not met, and they would not be extended or reissued. Those leases meeting the diligence criteria would be allowed to continue production. Four existing PRLAs on 17,005 acres would not be approved. No new coal leases would be issued on the 41,774 acres not currently leased.
- Present domestic livestock grazing would continue as authorized in the Escalante and Paria MFPs. The 450 AUMs in the WSA would remain available to livestock as presently allotted. After designation, existing range facilities (as listed in the No Action Alternative) could be maintained in a manner least degrading to wilderness values. New rangeland developments

DEATH RIDGE WSA



Map 2

ALL WILDERNESS ALTERNATIVE Death Ridge WSA UT-040-078

Legend

— All Wilderness Alternative (62,870 acres)

0 1 2 3
SCALE IN MILES

0 1 2 3 4 5
SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS

DEATH RIDGE WSA

would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that wilderness protection criteria are met. It is assumed that the 1 mile of proposed fence would be allowed, but the proposed 1,100-acre seeding would not be allowed.

- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S. 1964). No water resource facilities or treatments are located in the Death Ridge WSA, and none are planned.
- Wildlife transplants or developments would be allowed after designation only if compatible with wilderness values. Currently, there are no wildlife developments in the WSA and none are planned.
- The entire 62,870-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 18 miles of existing ways would be closed. Existing roads and ways, totaling 30 miles, would be "cherry-stemmed" in the following eight locations: Trap Canyon (1 mile); Death Ridge, north end (1.5 miles); Alvey Wash, north end (3 miles); Alvey Wash, west end (5 miles); Right Hand Collet Canyon (1.5 miles); Escalante Canyon, northwest end (6 miles); Escalante Canyon, south of Big Sage (10 miles); and Paradise Bench (2 miles). The last three "cherry-stemmed" roads listed above would create nonwilderness islands within the designated wilderness area. Mineral development and other activities could occur in these islands without wilderness limitations, generally as discussed under the No Action Alternative. The 30 miles of "cherry-stemmed" roads or ways and about 22 additional miles of dirt roads that border the WSA would remain open to vehicular use.
- A specific Wilderness Management Plan would be developed that would govern use and protection of the 62,870-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is some non-commercial harvest of forest products at the present time.
- Visual resources in the WSA would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The three non-wilderness islands that would be "cherry-stemmed" within the WSA would be managed as VRM Class IV.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter or disturb the landscape). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife

species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The Death Ridge WSA and surrounding area have a Class II Prevention of Significant Deterioration (PSD) classification under the Clean Air Act Amendments of 1977. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of the BLM (USDI, BLM, 1982b).

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit. Data collected from various sites such as Page, Arizona and Four Mile Bench, Garfield County, Utah indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations. Visibility within the WSA is excellent.

Geology

The Death Ridge WSA lies in the Kaiparowits Plateau-Escalante Benches section of the Colorado Plateau Physiographic Province. In general, the southern portion of the WSA consists of benches cut by canyons, while the northern part consists of narrow ridges divided by deep

canyons. Elevations range from 5,240 feet above sea level in the south to nearly 8,000 feet above sea level on Death Ridge.

Cretaceous bedrock and few Quaternary surficial deposits are the only units exposed in the WSA. The Cretaceous exposures consist of the coal-bearing Straight Cliffs, Wahweap, and Kaiparowits Formations. The Wahweap Formation contains fossiliferous beds, especially in the upper half, containing gastropods, pelecypods, petrified wood, and dinosaur bones.

The Death Ridge WSA contains three structural axes. Two of these, the Upper Valley anticline and the Alvey syncline, originate in the middle of the unit and become more pronounced to the north. The Upper Valley anticline trends north-northwest and shares its east flank with the Alvey syncline. The west flank achieves monoclinical proportions when strata dip to 23 degrees. The third structural axis is the Rees anticline in the southeastern part of the WSA with dips to 3 degrees. No important faulting has been mapped anywhere within the WSA.

Soils

The soils are predominantly aridisols (light-colored) with inclusions of badland-rockland and alluvial (sand, silt, clay) soils.

The aridisols occur on rolling to steep slopes, upland mesas, and plateaus. The soils are shallow to moderately deep, light-colored loams or silts, mildly to moderately alkaline, and are underlain at 10 to 20 inches by fractured bedrock. The soils are well drained with moderate to slow permeability and are moderately to highly erodible.

The badland-rockland occurs on the benches, mesas, and along steep canyon walls. The soil material is shallow to very shallow, light-colored loam and overlies sandstone or shale. Runoff is rapid and very rapid with high sediment yield.

The alluvial soils occur on the floodplains, primarily Alvey and Collet Washes and their tributaries. These soils are deep, brown or reddish-brown loams, moderately to mildly alkaline. They are well drained with slow to moderately rapid permeability.

Most erosion is due to runoff from thunderstorms, but wind and snowmelt also cause some minor erosion. Sparse vegetation cover on much of the WSA also contributes to erosion. Table 2 indicates erosion classes and soil loss data.

DEATH RIDGE WSA

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
DEATH RIDGE WSA

Resource	Alternatives	
	No Action (Proposed Action)	All Wilderness (62,870 Acres)
Mineral and Energy Resources	Potential recovery could be achieved for up to 3 to 15 million barrels of oil, 18 to 90 billion cubic feet of natural gas, 800 million tons of coal, and 2,500 tons of uranium oxide. There is a moderate to high potential for oil, gas and coal development in the future.	Oil, gas and coal likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. The loss of development opportunity could be significant in the long term for oil, gas and coal.
Wildlife	About 5.5 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. However, wildlife would benefit from an 1,100-acre seeding and development of a water source.	Wildlife would benefit from solitude, but would not benefit from seeding and water development.
Forest Resources	Limited commercial and non-commercial harvest of pinyon-juniper would likely occur.	Forest resources would not be harvested.
Livestock	Grazing of 450 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of 1 mile of fence and 1,100 acres of seeding, could be constructed to produce an additional 113 AUMs.	Grazing of 450 AUMs and maintenance of existing developments would continue. New developments proposed in the future might not be allowed. The 1,100-acre seeding would not be allowed and 113 AUMs of potential forage would be lost.
Visual Resources	The quality of visual resources could be impaired on up to 4,594 acres which could reduce visual quality in the WSA as a whole.	Visual quality could be impaired on up to 20 acres. Visual quality would probably be maintained in the WSA as a whole
Recreation	ORV use would continue on 18 miles of ways at current low levels. Overall recreational use could increase from the present 100 visitor days per year to 149 over the next 20 years. Up to 3,494 acres of mineral-related disturbance and 1,100 acres of land treatment could reduce the quality of primitive recreation.	The WSA, including 18 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 4,594 acres (7.3 percent of the WSA). Values throughout the WSA could be affected.	Wilderness values would be protected, except on up to 20 acres (less than 1 percent of the WSA) which may be disturbed by development of valid mineral rights. Wilderness values would be preserved.
Land Use Plans and Controls	This alternative would be consistent with the <i>Kane and Garfield County Master Plans</i> , State of Utah plans and policies, and the BLM Escalante and Paria MFPs. Approximately 75 percent of the WSA would be transferred to State ownership if Project BOLD is carried out.	This alternative would not be consistent with Kane and Garfield Counties' concepts of multiple use. It would be consistent with State policy if present State lands were exchanged. Designation would constitute an amendment of the BLM Escalante and Paria MFPs. This alternative would conflict with Project BOLD.
Socio-economics	Annual local sales of less than \$9,410 and Federal revenues of up to \$225,348 would continue. An additional \$152,502 per year in Federal revenues could be derived from leasing of presently unleased areas. An additional \$158 per year in grazing fees could result from seeding of 1100 acres. An additional \$2,280 of livestock sales annually could result from land treatments.	Annual local sales of less than \$9,410 and Federal revenues of up to \$630 would continue, but Federal revenues of up to \$377,378 from mineral leasing and increases in livestock grazing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	8,953	13	24,173
Moderate	1.3	53,719	78	69,835
Slight	0.6	6,198	9	3,719
Stable	0.3	0	0	0
Total		68,870	100	97,727

Sources: USDI, BLM, 1979a and 1979b; Leifeste, 1978.

Vegetation

The major existing vegetation type in the WSA is pinyon-juniper, which covers approximately 57,435 acres. Areas of sagebrush totaling approximately 3,060 acres are scattered throughout the WSA. No significant riparian vegetation is found in the WSA. Small isolated communities of oak and ponderosa pine covering a total of 2,375 acres also occur in the WSA.

There are two Federally listed sensitive plant species in the WSA. *Penstemon atwoodii* is known to exist on Death Ridge and in Right Hand Collet Canyon. *Xylorhiza cronquistii* is found on the benches below the cliffs in the southeastern part of the WSA.

The Death Ridge WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The WSA does not contain any perennial streams. Major drainages in the WSA include Escalante, Paradise, Right Hand Collet, Alvey Wash, and Trap Canyons. These washes may flow in response to thunderstorms and periods of snowmelt. Water does occur in Right Hand Collet Canyon throughout much of the year. Generally the water quality of surface runoff is poor due to chemical composition of the area's soils. Sediment loads are light except after heavy runoff.

Regional fresh water aquifers occur in sandstones of the Entrada and Navajo Formations. Less extensive aquifers occur near the surface in the alluvium of Alvey Wash. Perched aquifers occur in sandstone of the Wahweap and Straight Cliffs Formations.

In the WSA there are one developed spring, two reservoirs, two troughs, and approximately 6 miles of water pipeline. There are existing seeps in Right Hand Collet, Escalante, and Paradise Canyons.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 3+ was assigned to the Death Ridge WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The energy and mineral resource rating summary is given in Table 3.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of titanium, which is

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f3	c4	Less than 50 million barrels of oil; less than 300 billion cubic feet of gas
Uranium (Carcass Canyon)	f2	c4	Less than 1,500 tons of uranium oxide
Uranium (Morrison Area)	f3	c1	Less than 1,000 tons of uranium oxide
Geothermal	f1	c2	None
Coal	f4	c4	1.6 billion tons
Titanium	f2	c2	Unknown

Sources: SAI, 1982; U.S. DOE, 1983.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

currently listed as a strategic and critical material (Federal Emergency Management Agency, 1983).

LEASABLE MINERALS

Oil and Gas

The only oil and gas production in south-central Utah in the vicinity of the WSA comes from the Upper Valley Field located immediately to the northwest. This field was discovered on the Upper Valley anticline in 1964 and stimulated drilling activity on similar anticlinal structures in south-central Utah. To date, however, no commercial oil and gas potential has been identified in south-central Utah outside the Upper Valley Field. Because of the proximity of the Upper Valley Field to the Death Ridge WSA, a discussion of this field relates directly to the oil and gas favorability of the WSA.

The oil reservoir is located along the prominent Upper Valley anticline, but the producing area is offset from the crest of the anticline to the west flank and the southern plunging nose. Sharp (1976) attributes this offset to a regional, southwest-directed hydrodynamic drive in the Kaibab Formation. If correct, oil accumulation in other anticlines within the region may be displaced to the south. Total production from this field is expected to approach 50 million barrels. Production is from four distinct zones in the Timpoweap Formation of Triassic Age and the Kaibab Formation of Permian Age (Sharp, 1976).

The axis of the Upper Valley anticline plunges south through the northwest part of the WSA. Although no oil and gas wells have been drilled within the WSA, producing wells occur less than

1,000 feet to the north. Tenneco has apparently defined the limits of their field, and it is doubtful that their structure contains any oil in the WSA. However, until conclusive proof is obtained through drilling or other geologic evidence, it is impossible to state categorically that the structure in the WSA is barren.

The other favorable structure in the WSA is the Rees Canyon anticline. Two wells have tested this anticline about 6 miles southeast of the WSA. These wells were completed in 1954 and 1955. One of the wells penetrated Cambrian rocks at a total depth of 10,045 feet, and the other penetrated the Mississippian Redwall Limestone at a total depth of 9,017 feet. No oil shows were reported from either well (Kunkel, 1965). However, the portion of the anticline in the WSA is up-structure from these dry holes and may represent a favorable target.

Based on the proximity of the WSA to the Upper Valley Field, the WSA was assigned an oil and gas rating of f3/c4 (favorable for medium-sized oil and gas fields, i.e., 10 to 50 million barrels in place, with a high certainty of occurrence).

Medium-sized fields in Utah typically have an areal extent of about 5,000 acres and require about 300 acres for developmental facilities. Under the current land use plans all 62,870 acres are open to leasing subject to the standard use and wilderness stipulations.

At the present time 53,810 acres within the WSA are leased for oil and gas and 9,060 acres are unleased. Of the leased acreage, 13,590 acres represent pre-FLPMA leases (issued before October 21, 1976). The remaining 40,220 leased acres were issued after October 21, 1976. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM,

DEATH RIDGE WSA

1981c). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Coal

The WSA lies in the central portion of the Kaiparowits Coal Field, with the entire tract underlain by the coal-bearing Cretaceous Straight Cliffs Formation. Estimated coal reserves within the entire Kaiparowits Coal Field total 15.2 billion tons (Doelling and Graham, 1972).

The entire WSA (62,870 acres) is underlain by minable coal totaling an estimated 1.587 billion tons (Doelling and Graham, 1972). An estimated 128 million tons occur at depths less than 1,000 feet, 1,374 million tons occur at depths between 1,000 and 2,000 feet, and 85 million tons occur at depths between 2,000 and 3,000 feet. Approximately one-third to one-half of the coal is recoverable (Doelling and Graham, 1972). Although no sample analyses are available from within the WSA, analyses of samples taken near the northwest boundary of the WSA indicate an average ash content of 5.45 percent and an average heat content of 10,800 British thermal units (Btu) per lb (Doelling and Graham, 1972). No analyses were available for sulfur. Based on the above discussion, the WSA is assigned a coal favorability rating of high (f4) and a certainty of occurrence rating of high (c4).

The WSA is within the Kaiparowits Known Recoverable Coal Resource Area (KRCRA), which includes the minable coal area. In accordance with the underground mining exemption from the unsuitability criteria (43 CFR 3461.2[a]), none of the area in the KRCRA within the WSA was determined to be unsuitable for mining as a result of the application of the unsuitability criteria (USDI, BLM, 1981a and 1981b).

There are presently 18 coal leases covering 21,096 acres (approximately 34 percent of the WSA). Sixteen of these leases were issued prior to October 21, 1976 (pre-FLPMA). The remaining two leases were issued recently and contain the standard wilderness protection stipulations for those portions of the leases within the WSA. The pre-FLPMA and post-FLPMA leases cover 15,055 acres and 6,041 acres, respectively. An additional 17,005 acres are currently covered by four PRLAs.

The distribution of coal appears to be more or less even throughout the WSA. Accordingly, it is estimated that the pre-FLPMA leases contain about 24 percent (estimated at 380 million tons) of the minable coal in the WSA, while the post-FLPMA leases contain about 10 percent (estimated at 159 million tons) of the minable coal in the WSA. The acreage under PRLA application contains an estimated 27 percent (estimated at 428 million tons) of the minable coal in the WSA. The remaining 39 percent (estimated at 620 million tons) of the minable coal in the WSA remains unleased.

Any development would probably be by underground methods. It is difficult to determine the specific areas where actual coal operations would occur. It is assumed that access to the coal would be from the east since the shallower coal is located there. Although vast resources of recoverable coal are indicated or inferred, much more detailed exploration will be required by drilling before large-scale mines can be planned and started. Obviously, the majority of development would be associated with existing or pending leases, since they account for over 60 percent of the coal.

It should be noted that according to SAI (1982), development of Kaiparowits Plateau coal will face significant economic and environmental problems. These problems include poor accessibility, lack of abundant water, high costs of underground mining, and competition from nearby areas where coal is more readily available and of better quality, particularly central Utah, northeast Arizona, and northwest New Mexico.

Geothermal

Most investigators consider recent crustal instability, high heat flow, and young igneous rock (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks are known to occur within or near the vicinity of the WSA. The nearest thermal spring to the WSA is approximately 40 miles to the northeast, and it discharges at a temperature of 20 degrees Centigrade (C) (National Oceanic Atmospheric Administration, 1979).

No geothermal resources are known to occur within or near the WSA. Accordingly, the geothermal favorability for the WSA is low (f1) with a certainty of occurrence rating of low (c2).

LOCATABLE MINERALS

Uranium

The following rock units are considered favorable for uranium in south-central Utah (U.S. DOE,

DEATH RIDGE WSA

1979): the Basal Members and Petrified Forest Member of the Chinle Formation (Triassic), and the Salt Wash Member of the Morrison Formation (Jurassic). The Morrison Formation is perhaps 100 to 200 feet thick in the vicinity of the WSA and it thickens rapidly to the east. According to SAI (1982) the Morrison has been removed by pre-Dakota erosion a short distance west of the WSA. Throughout most of the tract, however, the Morrison Formation lies at a depth of about 2,000 feet. The Chinle Formation lies at depths generally exceeding 4,500 feet (Hintze, 1973).

According to Bendix (1976), both the Chinle and Morrison Formations are relatively unfavorable uranium host rocks in the Kaiparowits Plateau region. This conclusion was based largely on the high sandstone-to-mudstone ratios, the lack of organic matter, and the wide lateral continuity of the sandstones, especially in the Morrison Formation. Bendix (1976) also points out that, although the paucity of mudstones in the Morrison does not preclude uranium mineralization, deposits found in similar environments nearby, such as the Henry and Carrizo Mountains, tend to be small and highly localized. Small deposits of this type are economical to extract only when exposed in outcrop or when closely grouped.

Based on the above discussion, only the Morrison Formation in the WSA is considered favorable for the occurrence of economic deposits of uranium. According to the U.S. DOE (1979 and 1983), one area within the WSA has a relatively high certainty (c4) to contain small deposits of uranium (f2). This area is identified as the Carcass Canyon possible resource area. The Carcass Canyon possible resource area is 53,760 acres in size, of which 9,760 acres occur within the WSA. An additional 12,250 acres within the WSA fall within the Morrison Formation favorable area (f3/c1). The remainder of the WSA is not considered favorable for the occurrence of uranium.

Possible resource areas are defined by the U.S. DOE as those areas where potential resources are estimated to occur in undiscovered or partly defined deposits in formations or geologic settings productive elsewhere within the same geologic province. Favorable areas are defined by U.S. DOE as geographic areas in which the available data indicate the existence of geologic environments favorable for the concentration of uranium. The U.S. DOE (1979 and 1983) has estimated that the Carcass Canyon possible resource area has a 50-percent probability to contain 1,500 tons of uranium oxide (at a minimum grade of 0.01 percent) in the Salt Wash Member of the Morrison Formation. The extent of such a deposit is esti-

mated to be about 250 acres (based on 0.01 percent uranium oxide and a 6-meter average thickness for the host rock).

Actual development operations for an ore body in these possible resource areas would be by underground methods and would involve very little surface area. Mines of this size typically require only one or two air vents on the surface. Portal location would depend, of course, on the location of the possible ore body.

Developmental drilling, especially for detailed delineation of an ore body, could require significantly more surface area than actual mining operations. This would depend largely on the size and complexity of the possible ore body and how much drilling would be involved. A closely spaced drilling program could require anywhere from a few acres for a small deposit with a blanket-type configuration, to possibly 100 or more acres for larger deposits with more complex configurations.

The favorable area could contain up to 1,000 tons of uranium oxide which would be mined by underground methods. To date no mining claims have been located in the WSA.

Wildlife

The Death Ridge WSA has habitat (pinyon-juniper, sagebrush, and mountain shrub) that could support approximately 59 species of mammals, 141 species of birds, 41 species of reptiles, and 5 species of amphibians. Approximately 8 to 13 species of raptors are known to or suspected of nesting in the WSA.

Game species in the WSA are mule deer, cougar, cottontail rabbits, chukar, and mourning doves. Mule deer, although not common, are yearlong residents in the WSA. Cougar occur in the area in limited numbers, their population being limited by the low deer population.

Bald eagles and peregrine falcons are two endangered species recorded to have been sighted in the WSA.

The Utah Division of Wildlife Resources (UDWR, 1982) list of sensitive species includes three species that could occur in the WSA: Lewis woodpecker and the western and mountain bluebirds.

No critical habitat has been identified in the WSA. No wildlife habitat plans or wildlife projects have been developed within the WSA and none have been proposed.

Forest Resources

Forest resources in the WSA are associated with pinyon pine and juniper. Opportunities exist to harvest pinyon and juniper for both personal use and commercial resale for fuelwood and fence-posts (57,435 acres, cords per acre unknown). Noncommercial harvesting potential of Christmas trees and pine nuts is present in the WSA. Due to the limited and scattered occurrence of other tree species, no other forest resources exist.

Livestock and Wild Horses/Burros

The WSA contains portions of three livestock grazing allotments. Table 4 summarizes livestock use in the WSA, and Table 5 identifies existing and proposed range improvements in the WSA. There are approximately 450 AUMs within the WSA. About 4,379 acres are suitable for grazing with 58,491 being unsuitable. At present, there are 6 miles of pipeline, two reservoirs, two troughs, 2 miles of fence, and one spring development within the WSA. Eleven hundred acres of seeding and 1 mile of fence are proposed for the WSA. The land treatment would provide approximately 113 AUMs of livestock forage. Vehicles are generally not used for management of livestock in this WSA.

There are no wild horses or burros in the WSA.

TABLE 4
Livestock Grazing Use Data

Allotment	Total Acres	Acres in WSA	Suitable Acres in WSA ¹	Unsuitable Acres in WSA ¹	AUM Grazing Preference in WSA	Livestock Permits Using WSA
Alvey Wash	60,140	11,790	1,720	10,070	131	1
Last Chance	253,522	22,475	370	22,105	53	1
Headwaters	266,355	28,605	2,289	26,316	266	8
Total		62,870	4,379	58,491	450	10

Sources: USDI, BLM, 1979a and 1979b.

¹ The suitability of an area for grazing is determined by a number of factors including steepness of terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available feed is not allocated for domestic livestock grazing.

TABLE 5
Existing and Proposed Range Improvements

Allotment	Existing Improvements	Proposed Improvements
Alvey Wash	6 Miles of Pipeline 1 Spring Development 1 Reservoir 2 Troughs 0.5 Mile of Fence	1,100 Acres Seeding
Last Chance	1.5 Miles of Fence 1 Reservoir	1 Mile of Fence
Headwaters	None	None

Sources: USDI, BLM, 1979a and 1979b.

Visual Resources

The WSA possesses a variety of landscape characters and features. The BLM visual resource inventory classified approximately 45,000 acres as Class B and 17,800 acres of Class C scenery; the entire WSA was classified as a VRM Class IV Management Area. (Refer to Appendix 7 for a description of BLM's VRM rating system.)

Cultural Resources

Two systematic sampling (Class II) cultural resource inventories have been carried out that, at least partially, encompass the Death Ridge WSA. They are the *Cultural Resource Evaluation of South-Central Utah, 1977-1978* (USDI, BLM, 1979d) covering 1 percent of the entire Escalante Planning Unit and a 10-percent random sample of coal tracts (Kearns and Kemrer et al., 1982). This latter inventory largely coincides with the Death Ridge WSA and is, therefore, an appropriate inventory from which to extrapolate archaeological data.

Some 7,300 acres were inventoried resulting in the identification of 134 sites. These sites were evenly distributed over the landscape resulting in a site density on the order of 12 sites per square mile. This figure should hold for the WSA and is an average not uncommon over large portions of the BLM Cedar City District. There are no National Register sites in the WSA.

The sites represent virtually all the known prehistoric cultures in southern Utah (i.e., Archaic, Fremont, and/or Anasazi, and Southern Paiute) encompassing perhaps 8,000 years of prehistory. Nearly all the sites identified relate to specific activities and temporary habitation, primarily by mobile hunting and gathering populations of the Archaic and Paiute periods and some peripheral use by the more sedentary Fremont and Anasazi agriculturalists.

DEATH RIDGE WSA

The authors of the Escalante Project (Kearns and Kemrer et al., 1982) commented on the undisturbed nature of the sites. This is largely a result of inaccessibility, generally a virtue in terms of cultural resource management because it ensures, to some degree, data available for future research.

Recreation

The Death Ridge WSA offers opportunities for backcountry recreation activities such as hiking, backpacking, and sightseeing. Reliable data on visitor use are not available. It is estimated that visitor use would be less than 100 visitor days (33 dayhikers, 33 backpackers, and 33 sightseers) per year. The Kanab and Escalante Resource Areas receive few inquiries concerning recreation potential for this WSA.

ORV use is generally limited to roads and ways established for mineral exploration. Many of these roads and ways have become impassable due to erosion and no maintenance. Due to the topography and remote location of the WSA, the actual ORV use is practically nonexistent. Overnight backpacking trips into the WSA are restricted due to lack of water sources in the WSA. The quality of the hiking opportunity is only moderate and would not be rated superior to other hiking opportunities in the region.

Wilderness Values

SIZE

The WSA contains 62,870 acres and is approximately 9 miles long (north to south) and 8 miles wide (east to west).

NATURALNESS

Man has imprinted less than 1 percent of the WSA. The portions of the unit where naturalness has been impaired resulted mainly from exploratory coal drilling. In the Death Ridge WSA, the quality of naturalness has not changed since the *BLM Intensive Wilderness Inventory* decision. No additional imprints have occurred in the WSA as the result of impairing uses or activities allowed under BLM's *Interim Management Policy* (USDI, BLM, 1979c). All 62,870 acres meet the *Wilderness Act* criteria for naturalness. There are 628 acres with imprints that are substantially unnoticeable.

SOLITUDE

The size and configuration of the WSA, in combination with topography and vegetation, support

opportunities for solitude. The incised canyon drainages and broken topography between some canyons offer topographic screening. For example, the peninsula between Right Hand Collet Canyon and the Escalante Canyon exhibits an elevated and isolated plateau configuration. Vegetation screening consists of a dense pinyon-juniper forest cover in rough areas and small ponderosa pine forest elsewhere. Topographic screening occurs where rock formations outcrop above the plateau. A visitor can find seclusion in the canyons and in the areas of broken topography between canyons.

Vegetation complements topography in providing for solitude in most of the WSA. However, the lower portion of the unit lacks sufficient vegetation or topography to provide screening and consequently lacks outstanding opportunities for solitude.

Offsite intrusions and influences are not present within the WSA.

In summary, about 50 percent (31,435 acres) of the WSA meets the solitude criterion for areas under wilderness review. These areas are found in canyons and on peninsulas between drainages.

PRIMITIVE AND UNCONFINED RECREATION

There is no outstanding opportunity for primitive and unconfined recreation present in the WSA. Hiking is the only activity of any importance. It is rated as moderate in quality and is not superior to other hiking opportunities in the region.

SPECIAL FEATURES

No scientific values were identified within the WSA.

The *BLM Intensive Wilderness Inventory* concluded that the diversity of plant life ranging from low desert shrub to ponderosa pine enhances the study and observation of ecology. Three stands of ponderosa pine are present in the Alvey Wash drainage in the northeastern portion of the WSA. The ponderosa pine is adjacent to desert shrub in Alvey Wash and in a tributary to Little Valley Wash. Elevations range from 7,505 feet to 6,500 feet, and pine and desert shrub types can be found in locations less than 1 mile apart. Educational values are present on approximately 2,000 acres.

At least two stands of ponderosa pine are present above the Right Hand Collet Canyon and Relish Seep areas. Elevations range from 7,526 feet to 6,240 feet, and again the distance between the desert shrub and pine types is often less than 1 mile. Educational values are present on approximately 1,900 acres.

The geologic features of Paradise Canyon provide scenic values. In the upper portion of Paradise Canyon, sandstones in the Wahweap Formation outcrop as walls and cliffs. The sandstone exposures in this area are the most colorful in the WSA. The ponderosa pines growing in the sandstone enhance the scenic value of the area.

In the northwestern portion of the WSA, the canyon in upper Trap Canyon Wash possesses scenic values. Two unnamed sandstone monoliths or fins above Alvey Wash are prominent landmarks in the northeastern portion of the WSA that possess scenic value. South of Right Hand Collet Canyon, a 7,526-foot sandstone outcropping, an unnamed box canyon immediately below the outcropping, and an adjacent stand of ponderosa pine all combine to provide an area of scenic value. Approximately 1,500 acres of scenic values are present in the WSA.

No historical values were identified within the WSA.

Land Use Plans and Controls

The WSA lies within the BLM Escalante and Paria Planning Units, which are being managed under the land use decisions of the Escalante and Paria MFPs (USDI, BLM, 1981a and 1981b). The present principal use within the WSA is livestock grazing. The WSA encloses 3,840 acres of State land within its boundaries. State lands are managed by the State Land Board for the purpose of generating revenues for the public school system. The State of Utah (Project BOLD) proposes to acquire through exchange a large block of land within the WSA (approximately three-fourths of the WSA). Only the southern part of Township 39 South, Range 3 East and the land in Township 39 South, Range 2 East are not included in the Project BOLD proposal.

The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple use concept."

The *Garfield County Master Plan* (Five County Association of Governments, 1984) stresses economic development and the need for maintaining access to areas having development potential. The Plan covers portions of this WSA. The Master Plan recognized that the county possesses "...

some of the most spectacular scenery in the United States The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM land in three WSAs and 31,600 acres in one Forest Service unit be recommended for wilderness. The county plan recommends that the remaining land within the county, including the Death Ridge WSA, be retained for multiple use. The Plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

Socioeconomics

DEMOGRAPHICS

The Death Ridge WSA is located in both Garfield and Kane Counties, Utah. Garfield and Kane are rural counties having average population densities of less than one person per square mile. This density is very low compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in these counties (3,673 persons in Garfield and 4,024 in Kane County) is concentrated in small communities rather than being evenly distributed throughout the area.

The community of Escalante lies along a major access route to the Death Ridge WSA, Utah Highway 12. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is a gateway and service area for visitors to the WSA.

EMPLOYMENT

The economies of Kane and Garfield Counties are somewhat similar in structure, both being dominated by the government sector and having strong services sectors in terms of employment (USDC, Bureau of Economic Analysis, 1982). The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (18 percent), and services (13 percent). The three most important sectors of the Kane County economy in terms of 1980 employment are: government (17 percent), retail trade (17 percent), and services (14 percent). Table 6 presents the employment and personal income estimates for the two counties.

Possible impacts from wilderness designation are expected to be more obvious at the community level than the county level. Therefore, a description of the economies of communities in the region is necessary.

TABLE 6
Employment and Personal Income
Garfield and Kane Counties, Utah

Industrial Sector	Garfield County		Kane County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	2,143	24,792	1,452	12,595
Proprietors	349	2,637	382	2,623
Farm Proprietors	209	807	122	136
Nonfarm Proprietors	140	1,830	260	2,487
By Industry Source	—	—	—	—
Farm	27	949	27	382
Nonfarm	1,767	23,843	1,043	12,213
Private		19,049	798	9,614
Ag. Serv., For., Fish., and Other	(L)	79	(L)	0
Mining	208	4,222	17	196
Construction	379	5,536	51	1,544
Manufacturing	247	3,294	70	566
Nondurable Goods	(D)	(D)	(D)	(D)
Durable Goods	(D)	(D)	(D)	(D)
Transportation and Public Utilities	84	1,545	150	1,875
Wholesale Trade	(L)	96	12	230
Retail Trade	126	1,302	252	2,364
Finance, Insurance, and Real Estate	16	189	39	392
Services	270	2,786	202	2,427
Government and Government Enterprises	435	4,794	245	2,599
Federal, Civilian	140	1,656	18	252
Federal, Military	24	64	30	78
State and Local	271	3,074	197	2,269

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the nongovernment employment and income in the area is based in the agriculture and services sectors. This is based on the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in Escalante. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral exploration and leasing, livestock production, and recreation. Table 7 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 7
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas, and Coal Leases	0	\$224,718
Mineral Production	0	0
Livestock Grazing	\$9,000	\$630
Woodland Products	Unknown	0
Recreational Use	Less than \$410	0
Total	Less than \$ 9,410	Up to \$225,348

Sources: BLM File Data; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income.

Ten livestock operators have a total grazing privilege of 450 AUMs within the WSA. If all this forage were utilized, it would account for \$9,000 of livestock sales and \$2,250 of ranchers' returns to labor and investment.

Some woodland products have been harvested from the WSA; however, the harvests were small and insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA's nonmotorized recreational use is low and related local expenditures are also low. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Death Ridge WSA is estimated as about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Kane and Garfield Counties.

The WSA generates Federal revenues from mineral leases and livestock grazing fees (refer to Table 7).

Eighty-three oil and gas and 18 coal leases in the WSA cover most of the WSA. At \$3 per acre, lease rental fees generate up to \$224,718 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 450 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$630 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this document.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable energy resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative (Proposed Action)

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and coal exploration and development. The area would be open to ORV use, grazing, mining, motorized hunting, predator control, and fire, insect, and noxious weed control. The degree of future development is unknown but would probably be moderate due to the presence of demonstrated mineral reserves. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: coal, 3,144 acres; oil and gas, 310 acres; and uranium, 40 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) There are also 1,100 acres of proposed land treatment.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If oil and gas, coal, and uranium are developed, air quality could be reduced up to the PSD Class II limitations. Disturbance of 3,494 acres due to mineral exploration and development would result in some increases in fugitive dust emissions. However, not all these acres would be disturbed at one time and Class II limitations would not be exceeded. There would be slight increases in fugitive dust during the chaining and seeding of 1,100 acres of pinyon-juniper.

GEOLOGY

Some impacts to geology are expected because surface disturbances associated with uranium, oil and gas, and coal exploration and development activities could affect 3,494 acres. Subsidence and fracturing of geologic formations could occur due to coal mining but the amount or degree is unknown.

SOILS

It is estimated that up to 3,494 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 3,494 acres would increase from 9,434 cubic yards/year to 18,868 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 9,434 cubic yards (9.6 percent) over current annual soil loss. The chaining and reseeded of 1,100 acres of pinyon-juniper would cause a temporary (2 to 3 year) increase in soil loss. However, as the new seedlings become established reduction from the current soil loss could be expected.

VEGETATION

The anticipated maximum of 4,594 acres disturbed would not significantly impact the WSA's sparse vegetation. Two sensitive plant species are found within or near the WSA. Before authorizing surface-disturbing activities (4,594 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, the BLM would initiate consultation with the Fish and Wildlife Service (FWS) as required by BLM policy. Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of threatened, endangered, or sensitive plant species would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 9,434 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFPs for the Escalante and Paria Planning Units.

Mineral exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and would not significantly impact ground water quality or quantity. Underground mining of coal could reduce the quality and flow of ground water; the extent is unknown. The impacts of coal mining on ground water would be partially mitigated by constraints on developments required by State laws.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 50 million barrels of oil in-place (3 to 15 million estimated recoverable) and up to 300 billion cubic feet of natural gas (18 to 90 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1

stipulations, and would not be affected by the adoption of this alternative. Approximately 310 acres of surface disturbance would take place if exploration and development were to occur. The degree of future development is unknown but could be moderate due to the proximity to the Upper Valley Oil Field.

Coal

An estimated coal resource of 0.8 billion tons of recoverable coal occurs on 62,870 acres of the WSA with 21,096 acres under lease. This resource could be explored and potentially developed on the entire WSA in the future and would not be affected by this alternative. It is estimated that up to 3,144 acres of surface disturbance would occur from coal development. The likelihood for production of coal is thought to be low in the near future on the 21,096 acres under lease within the WSA due to the lack of transportation corridors and facilities. However, the potential for coal deposits as a resource is high over the long term.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposit of up to 2,500 tons of uranium oxide could be developed. Approximately 40 acres could be disturbed due to exploration and development of this locatable mineral resource. No mining claims currently exist within the WSA. The degree of future development is unknown but would probably be low due to economic considerations (e.g., transportation costs, low potential, etc.).

WILDLIFE

Under this alternative, wildlife would be affected by an increase in forage due to the proposed 1,100 acres of land treatment. The new forage could increase wildlife numbers and improve the condition of animals. However, disturbance of an estimated 3,494 acres (5.5 percent of the WSA) through mineral and energy development and exploration would disrupt wildlife. Deer and mobile nongame animals would be dispersed from the disturbed areas for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. The endangered bald eagle and peregrine falcon and three sensitive bird species would also avoid the disturbed areas.

FOREST RESOURCES

The major vegetation cover is pinyon and juniper. Some noncommercial harvesting of firewood, posts, Christmas trees, and pine nuts has

DEATH RIDGE WSA

occurred and because this WSA is only 10 miles from Escalante, demand could increase in the future. Therefore, limited commercial and non-commercial harvesting of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante and Paria Planning Unit MFPs with 450 AUMs currently allocated in the WSA. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Motorized vehicles are generally not used to manage livestock and few changes in livestock management techniques are expected in the future. The 1 mile of fence and 1,100 acres of seeding would be developed and would result in improved livestock distribution and an increased carrying capacity of 113 AUMs.

VISUAL RESOURCES

Under this alternative 1,100 acres of vegetation manipulation would occur and 3,494 acres of mineral-related exploration and development are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would be met because the entire WSA is a VRM Class IV area. After rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality and Class B and C scenery could be reduced in the WSA as a whole.

CULTURAL RESOURCES

The archaeological sites in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 3,494 acres by mineral exploration and development and 1,100 acres of land treatment under this alternative could affect archaeological sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism could be a problem and would increase in proportion to the general population increase.

RECREATION

The quality of a user's primitive recreational expe-

rience would be reduced by surface-disturbing activities. Under this alternative 1,100 acres of vegetation manipulation would occur and mineral-related exploration and development are possible on 3,494 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation. The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 100 current visitor days per year to 149 visitor days at the end of 20 years.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante and Paria Planning Unit MFPs. However, under this alternative 1,100 acres of vegetation manipulation would occur and 3,494 acres of mineral exploration and development are possible. The related surface disturbance would result in a significant loss of naturalness and solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for coal development and related disturbance is high in this WSA in the long term.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Garfield and Kane County Master Plans* which recommend multiple use. This alternative is based on implementation of the current BLM Escalante and Paria Planning Unit MFPs and is, therefore, in conformance with them. The No Action Alternative would be consistent with State of Utah plans and policies that emphasize economic return. If Project BOLD is implemented approximately 75 percent of the WSA would be transferred to State ownership.

SOCIOECONOMICS

Under this alternative, no changes are expected in existing patterns and trends of population, employment, and local income distributions. Economic development of resources in the WSA would not be affected.

DEATH RIDGE WSA

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the coal, uranium, and oil and gas in the WSA were developed it would lead to a significant increase in employment and income for Garfield and Kane Counties. The probability of economic development of coal within the WSA is high in the long term (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (450 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The proposed land treatments that would produce 113 AUMs of new allocated forage could lead to \$2,280 of livestock sales and \$565 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only 49 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Surface-impacting activities that would be allowed without designation could increase demand for recreation by improving access.

Federal and State revenues would not be reduced by this alternative. There are 50,834 acres in the WSA open to coal or oil and gas leasing that are currently not leased. If leased they would bring up to \$152,502 additional Federal lease fee revenues per year, in addition to new royalties from lease production and bonus bids from new coal leases. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$630 per year) would continue. The additional 113 acres of forage produced by the proposed land treatment and allocated to livestock under this alternative would increase Federal revenues by \$158 annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (62,870 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 62,870-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 18 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that mining claims would be staked before wilderness designation and would be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas and coal leases would expire before production of commercial quantities. Oil and gas and coal leases would not be renewed and future leasing of oil and gas or coal would not be allowed. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates for the WSA.) The 1,100-acre vegetation manipulation would not be allowed.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (20 vs. 4,594 acres), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could not occur unless they could be developed in a manner nonimpairing to wilderness.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and activities would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 53,810 acres (13,590 acres pre-FLPMA and 40,220 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring

DEATH RIDGE WSA

within the WSA. Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to lease expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of up to 50 million barrels of oil in-place and less than 300 billion cubic feet of natural gas with 3 to 15 million barrels of oil and 18 to 40 billion cubic feet of natural gas potentially recoverable could be foregone under this alternative.

Coal

There are 18 coal leases (21,096 acres) and four pending PRLAs (17,005 acres) within the WSA. The entire WSA is underlain by coal with an estimated reserve of 1.6 billion tons of which 800 million tons are recoverable. It is assumed that the existing leases will expire under the diligent development regulations before production occurs and the PRLAs will not be issued. Therefore, under this alternative 800 million tons of recoverable coal would be foregone. The potential for developing this resource in the near future is low due to the complete lack of a transportation system and uncertain markets. Long-term development prospects are considered high.

Locatable Minerals

There are no mining claims within the WSA. Up to 2,500 tons of uranium oxide are estimated within the area. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 20 acres could be disturbed due to exploration and development of the locatable mineral resource. The worst-case impact to minerals would occur if the potentially recoverable minerals are not within claims filed prior to designation. In that case the potential for recovery of up to 2,500 tons of uranium oxide would be foregone. Because production of this metal is not currently occurring and because economic considerations (e.g., transportation, low potential, market price, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of recoverable uranium resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However, the

1,100-acre land treatment proposed would be foregone. Loss of the land treatment proposal would reduce the likelihood of expanding and improving the deer herd and nongame species within the WSA.

In addition, disturbance on 20 acres from exploration of locatable mineral resources could disrupt wildlife populations and result in these species leaving the disturbed area.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante and Paria Planning Unit MFPs. The 450 AUMs currently allocated in the WSA are controlled by 10 livestock permittees. Since use of motorized vehicles is currently taking place to manage livestock, some impact on the management of livestock could be expected. The proposed 1,100 acres of land treatment and 1 mile of fence would not be allowed. Therefore, an additional 113 AUMs of livestock forage would be foregone.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative, disturbance from 1,100 acres of planned vegetation manipulation would not occur and the possible mineral and energy related surface disturbance would be reduced from 3,494 acres to 20 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-

DEATH RIDGE WSA

case analysis) could not be denied, VRM Class I objectives may not be met on large portions of the WSA. Because the potential for development of mining claims is low, and expected disturbance is only 20 acres (.03 percent of the WSA) visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Current recreation use is low (about 100 visitor days a year) and the WSA lacks outstanding opportunities for primitive and unconfined recreation values. However, if designated, the few recreational opportunities in the WSA would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and due to the size and configuration of the WSA, the quality of the primitive recreation experience would not be negatively affected by the increased use.

If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for locatable mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 18 miles of ways within the WSA would be closed to ORV use.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of the WSA's limited recreational values.

WILDERNESS VALUES

Designation and management of all 62,870 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude. Solitude would be preserved on approximately 31,435 acres that meet the standards for outstanding solitude and 31,435 acres that do not meet the standard. Naturalness would be preserved on 62,242 acres. There is no outstanding opportunity for primitive and unconfined recreation within the WSA.

No development of leases is foreseen under this alternative. The possible mineral-related surface disturbance would, therefore, be reduced from 3,494 acres to 20 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. There are currently no mining claims within the WSA. If there were areas under mining claims and mineral-related disturbance, including access, occurred activities would eliminate naturalness and the opportunity for solitude on the affected areas, and could reduce these values in the area as a whole until the disturbed areas are satisfactorily reclaimed. However, mitigation would be imposed to protect wilderness values, and loss of these values under wilderness designation would be less likely than under the No Action Alternative.

It is concluded that wilderness designation and management of all 62,870 acres of the Death Ridge WSA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude (outstanding on 31,435 acres) except a potential 20 acres affected by the surface disturbance related to mineral exploration. In the area as a whole, however, no significant loss of wilderness values would be expected.

LAND USE PLANS AND CONTROLS

The existing BLM Escalante and Paria Planning Unit MFPs do not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Escalante and Paria MFPs.

Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service unit be recommended for wilderness. The Master Plan recommends that the remaining land within the county, including

DEATH RIDGE WSA

Death Ridge WSA, be retained for multiple uses. The *Kane County Master Plan* also states that this WSA should be managed for multiple uses. This alternative would not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. However, designation would conflict with the counties' plans because oil and gas leases would expire and future leasing and location of minerals would not be allowed.

If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns but would conflict with Project BOLD.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 7) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is moderate (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas and coal leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals

would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for coal development is high, it is estimated that potential mineral-related local employment and income would be significantly reduced by wilderness designation in the long term.

Livestock use and ranchers' income would continue as at present with \$9,000 of livestock sales and \$2,250 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with approximately \$565 per year in ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would not be significant.

The loss of 74,906 acres now leased for oil and gas and coal would cause an eventual loss of up to \$224,718 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$152,502 annually in Federal revenues from the 50,834 acres that could be leased for oil and gas or coal without designation. In addition to these rental fees, any potential royalties from lease production and bonus bid revenues from new coal leases could also be foregone.

If the proposed range improvement is not developed and used, an estimated annual \$158 of Federal grazing revenues from 113 increased AUMs would be foregone.

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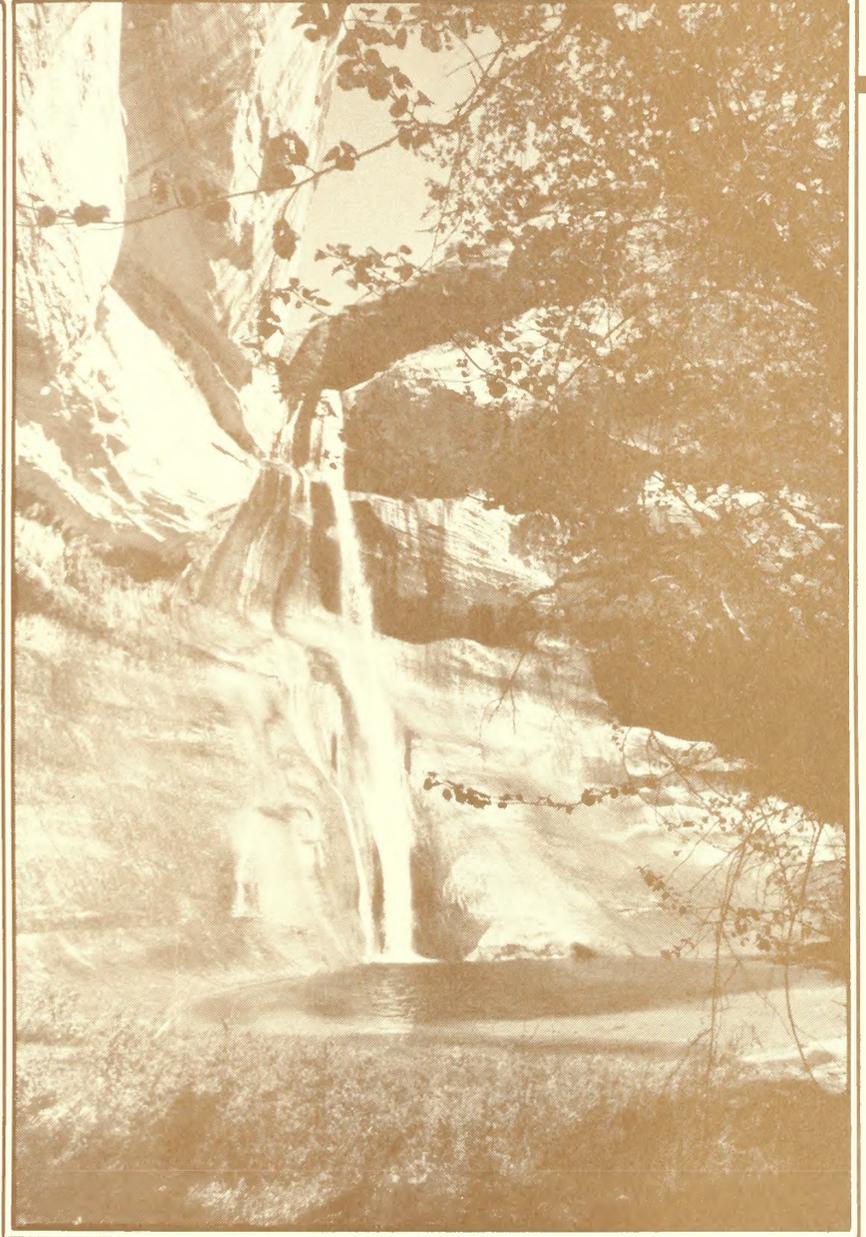
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DEATH RIDGE WSA

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Phipps Death- Hollow ISA



PHIPPS-DEATH HOLLOW ISA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	2
Alternatives Considered and Eliminated from Detailed Study	2
Alternatives Analyzed	3
No Action Alternative	3
All Wilderness Alternative	5
Partial Wilderness Alternative (Proposed Action).....	7
Summary of Environmental Consequences	9
AFFECTED ENVIRONMENT	12
Air Quality	12
Geology	12
Soils	12
Vegetation	12
Water Resources	13
Mineral and Energy Resources	13
Wildlife	15
Forest Resources	16
Livestock and Wild Horses/Burros	16
Visual Resources	17
Cultural Resources	17
Recreation	17
Wilderness Values	18
Land Use Plans and Controls	20
Socioeconomics	20
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	22
Analysis Assumptions and Guidelines for All Alternatives	22
No Action Alternative	22
All Wilderness Alternative	25
Partial Wilderness Alternative (Proposed Action).....	28
BIBLIOGRAPHY	31

PHIPPS-DEATH HOLLOW ISA

INTRODUCTION

General Description of the Area

The Phipps-Death Hollow Instant Study Area (ISA) is located in Garfield County, Utah, approximately 1 mile east of the Town of Escalante, Utah. The ISA contains 42,731 acres of BLM-administered land, which includes 34,276 acres of the Phipps-Death Hollow Outstanding Natural Area (ONA) and approximately 4,497 acres of the Calf Creek Recreation Area. The ISA encloses approximately 2,560 acres (four sections) of State land. The WSA is managed by the Escalante Resource Area of the Cedar City District.

The ISA is characterized by steep-walled canyons, mesas, plateaus, natural bridges, and arches, most of which are carved in colorful Navajo Sandstone. The Escalante River and its Death Hollow tributary have formed entrenched canyons in colorful red and white sandstone.

The dominant vegetation is pinyon-juniper, but there is some ponderosa pine and riparian vegetation also.

In general, the climate is temperate and arid with annual precipitation averaging about 10 inches. From June through early September convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates occur primarily from November through March.

Summer temperatures in Escalante, Utah, range approximately 30 degrees Fahrenheit (F), with highs in the mid 90s and lows in the mid 60s. Winters in Escalante, Utah have a temperature range of about 27 degrees F, with highs in the low 40s and lows about 15 degrees F. Snowfall in Escalante generally averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified in Scoping

Only one major issue was identified during the study phase for the Phipps-Death Hollow ISA. The Garfield County Board of Commissioners (1982) has indicated that the City of Boulder, Utah, may expand or construct an airport on the existing Boulder Airfield, which could conflict with wilderness designation. General issues pertaining to the ISA are discussed in Volume I.

Issues and concerns specific to Phipps-Death Hollow ISA raised in the spring of 1984 public scoping meetings (USDI, BLM, 1984) are responded to below.

1. *Comment:* The occurrence of the sensitive plant species *Astragalus barnebyi* in or near this WSA should be considered in the decisionmaking process.

Response: *Astragalus barnebyi* is not known to exist in the ISA. Sensitive plants, according to BLM policy, receive protection and consideration similar to threatened and endangered plants.

2. *Comment:* Carbon dioxide development would conflict with wilderness values.

Response: Recent discoveries of carbon dioxide on National Forest lands could impact the area; however, there are no current plans to explore the ISA or to establish easements across the ISA. Refer to the Mineral and Energy Resources, Affected Environment section, for a discussion on the potential for carbon dioxide development in the ISA.

3. *Comment:* Wilderness designation would protect headwaters of the Escalante River, which is a Nationwide Rivers Inventory segment with potential for study and addition to the National Wild and Scenic Rivers System.

Response: The Escalante River was nominated for study under Section 5(d) of the Wild and Scenic Rivers Act by the Secretaries of Interior and Agriculture on September 11, 1970. Over 10 miles of the river flow through the ISA. No designation has been made on the river. Wilderness designation would further protect the river from disturbance and intrusions.

4. *Comment:* This WSA contains archaeological sites that should be protected by wilderness designation.



PHIPPS-DEATH HOLLOW ISA

Response: The ISA contains 21 known archaeological sites—these sites are currently protected under the National Historic Preservation Act. Wilderness designation would reduce surface-disturbing activities and, consequently, the possibility of inadvertently impacting a site.

5. *Comment:* The Escalante Canyons, with Escalante Natural Bridge and Sids Canyon, containing glens and waterfalls, are the crown jewel of wilderness resources in Utah.

Response: The BLM has long recognized the special scenic values of the ISA. Designating the area as an ONA is evidence of this recognition.

6. *Comment:* This ISA satisfies every criteria for wilderness; all 42,731 acres should be designated.

Response: During scoping for this Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA/ISA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

7. *Comment:* There should be no deletions along the south boundary of this ISA. Pulling back the boundary toward the rim of the main canyon invites the construction of pullouts and overlooks that would severely impact the wilderness area.

Response: A partial alternative was developed to eliminate resource conflicts and areas with low wilderness quality. This alternative eliminated small acreages along the southern boundary. There are no known plans to

develop overlooks along the southern boundary of the ISA.

8. *Comment:* This ISA should be designated because it is contiguous with a proposed Forest Service wilderness area.

Response: The adjacent Forest Service area has been designated wilderness by Congress. The consistency with adjacent land use plans is discussed in the Land Use Plans and Controls, Affected Environment section.

9. *Comment:* No further development should be allowed in this ISA.

Response: The BLM has long recognized the ISA's outstanding recreational values. It has closed 38,800 acres of the ISA to off-road vehicle (ORV) use and 32,331 acres to oil and gas leasing. However, the ISA has potential for mineral development and other resource uses that are being considered in this study before recommending the future uses of the ISA.

10. *Comment:* The oil and gas potential of the ISA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the ISA to be high. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

A partial wilderness alternative was investigated that would reduce conflict with potential production of carbon dioxide gas. The objective of this investigation was to identify a compromise in resource use that would allow wilderness designation in part of Phipps-Death Hollow ISA and

nondesignation in part to allow carbon dioxide gas extraction. Such a partial alternative was not included in this document because data are not yet available to delineate the carbon dioxide reservoir.

Alternatives Analyzed

Three alternatives are analyzed for this ISA: (1) No Action; (2) All Wilderness (42,731 acres); and (3) Partial Wilderness (39,256 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 42,731-acre Phipps-Death Hollow ISA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Escalante Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981a). The State land within the ISA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase. (Refer to Appendix 3 for further information on State in-holdings.)

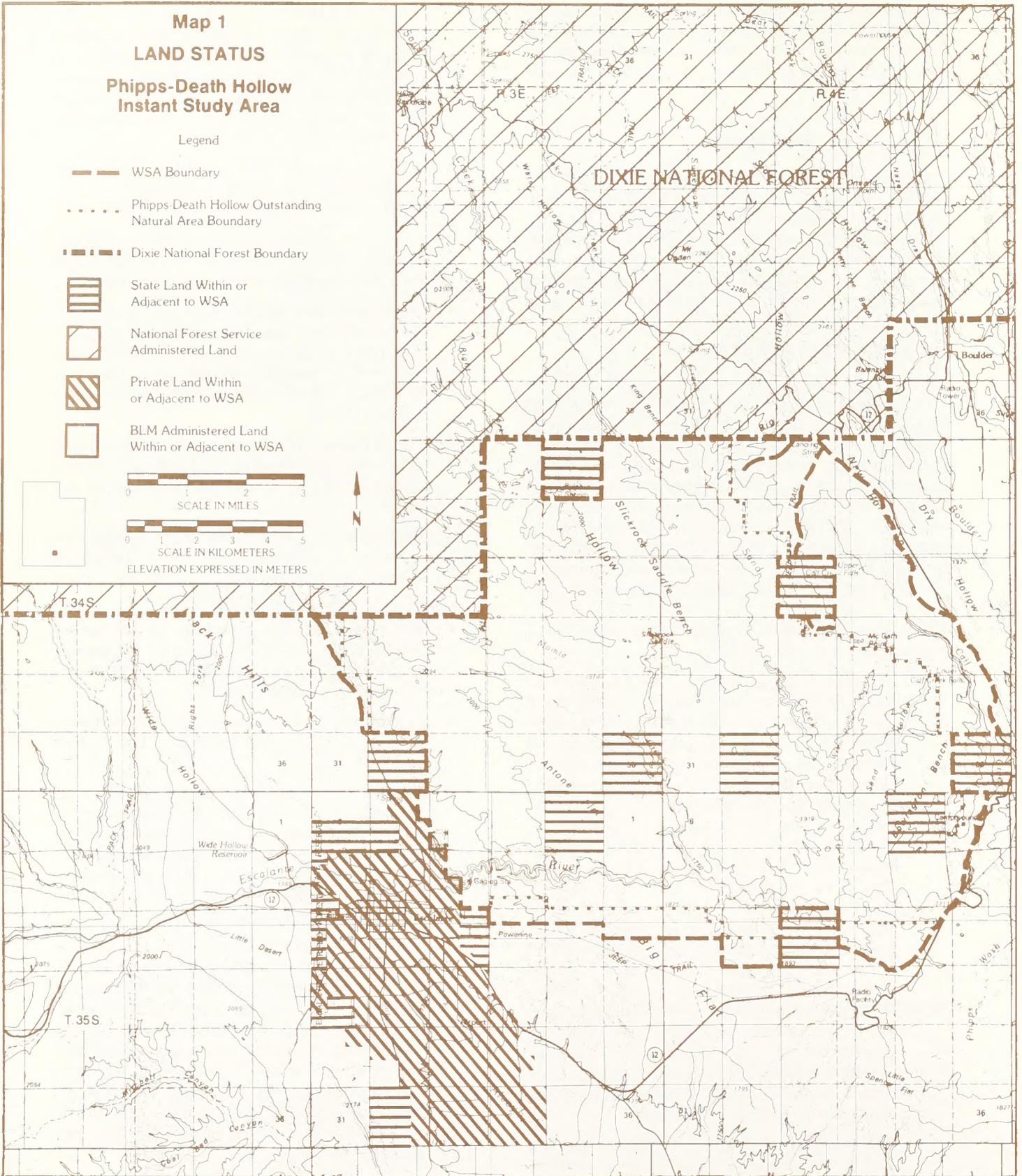
The following are specific actions that would take place under this alternative:

- All 42,731 acres would remain open to mineral location. No mining claims have been located in the ISA. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 Code of Federal Regulations [CFR] 3809), without concern for wilderness values. Existing oil and gas leases (24,200 acres) could be developed under stipulations issued at the time of leasing. Future leases could be developed under leasing Category 1 (standard stipulations) on 2,700 acres and Category 3 (no surface occupancy) on 7,700 acres. The majority of the Phipps-Death Hollow ONA, 32,331 acres, would be closed to oil and gas leasing. Approximately 13,950 acres of existing leases would be phased out to meet Category 4 restrictions and 150 unleased acres could be leased for oil and gas.
- The present domestic livestock grazing use in the ISA would continue as author-

ized in the MFP (currently 884 Animal Unit Months [AUMs]). Existing developments (about 1 mile of fence) could be used and maintained, and planned new range developments (approximately 2 miles of fence) would be allowed without wilderness considerations.

- Developments for wildlife, water resources, etc. could be allowed if in conformance with the MFP.
- ORV use would remain closed on 38,800 acres of the ISA. The remaining 3,931 acres in the ISA would be open to ORV use.
- Approximately 38,234 acres would be open to woodland product harvest. The remaining 4,497 acres would remain closed to the harvest of woodland products. There is minimal harvest of forest products at the present time.
- The area would continue to be managed under Visual Resource Management (VRM) Class I (42,731 acres) as directed by the MFP.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.
- It is assumed that the No Action Alternative would include continued designation of the Phipps-Death Hollow ONA and would include the management actions discussed for this alternative. Future management options for the ONA are separate actions that are not dependent on the wilderness review process and are, therefore, not analyzed in this document except as current management is integrated into the No Action Alternative.

PHIPPS-DEATH HOLLOW ISA



ALL WILDERNESS ALTERNATIVE

Under this alternative, all 42,731 acres of the Phipps-Death Hollow ISA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of four sections of State land (2,560 acres) within the ISA (refer to Map 1) would be likely, and could be authorized by purchase or exchange. The State of Utah has identified four adjacent State sections (2,533 acres) for possible exchange. Two other State sections adjacent to the ISA likely would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

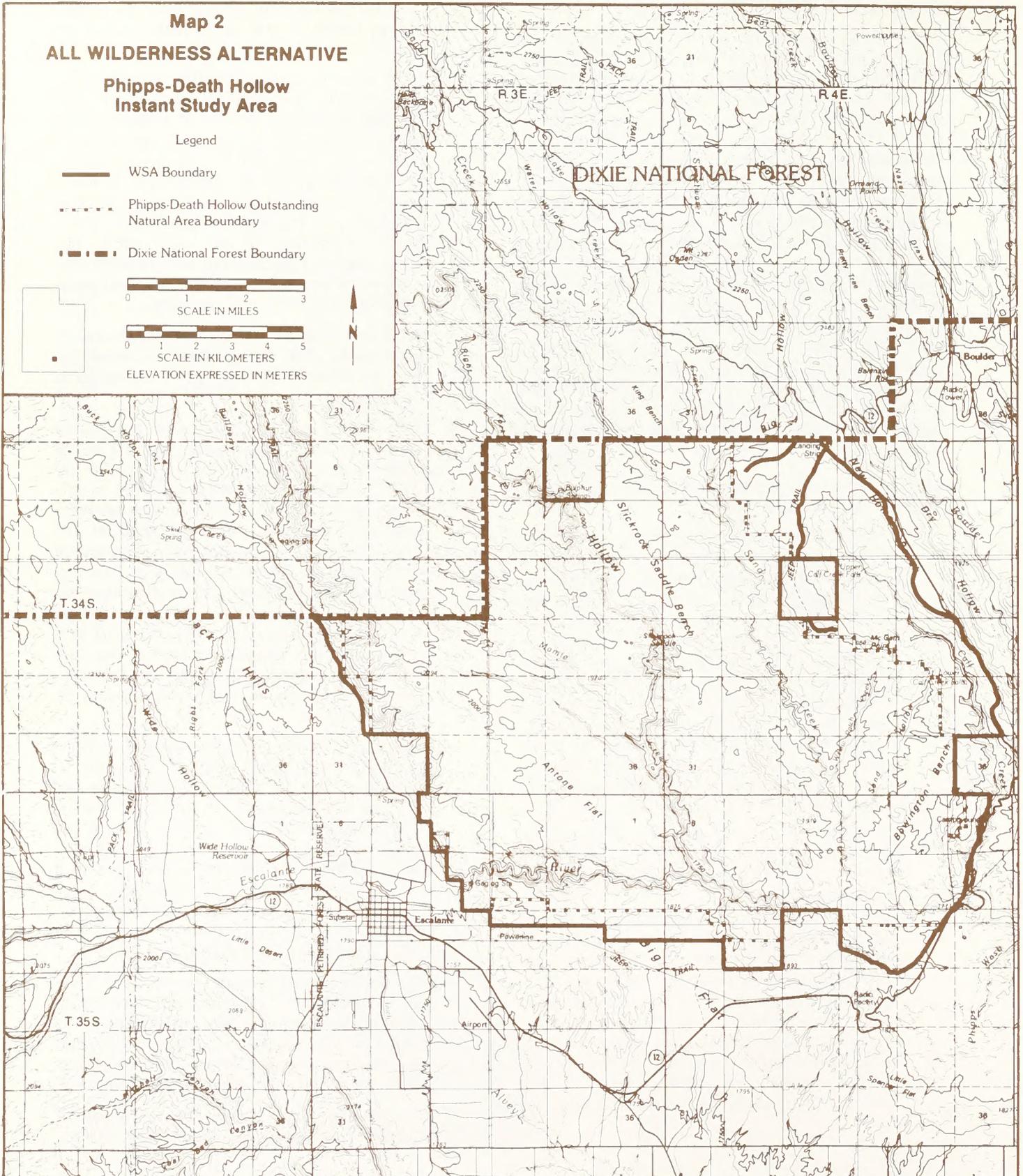
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 42,731 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims are located in the ISA. Should any be located prior to wilderness designation, development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Existing oil and gas leases, involving about 24,200 acres, would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown prior to wilderness designation.
- Present domestic livestock grazing would continue as authorized in the Escalante MFP. The 884 AUMs in the ISA would remain available to livestock as presently allotted. The use and maintenance of range developments (1 mile of fence) existing at the time of designation would continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new range developments (2 miles of fence are now planned) would be allowed if necessary for the protection or effective management of the range and/or wilderness resource and if it

can be carried out consistent with wilderness protection standards (refer to Appendix 1).

- New water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed after designation only if compatible with wilderness values, needed to correct an imminent hazard to life or property, or authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or watershed treatments are located in the Phipps-Death Hollow ISA, and none are planned.
- Wildlife transplants or developments would be allowed after designation if compatible with wilderness values. None are existing or planned.
- The entire 42,731-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments. About 10 miles of existing vehicular ways would not be available for vehicular use except as indicated above. The approximately 10 miles of paved and dirt and gravel roads that border the ISA and approximately 3 miles of "cherry-stemmed" roads would remain open to vehicular use.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 42,731-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is minimal harvest of forest products at the present time.
- Visual resources would be managed in accordance with VRM Class I standards,

PHIPPS-DEATH HOLLOW ISA



which generally allow for only natural ecological change.

- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to aerial methods.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, 39,256 acres of the Phipps-Death Hollow ISA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA with the most outstanding wilderness characteristics. The acreage analyzed as wilderness includes, with small exceptions, the Phipps-Death Hollow ONA. The remaining 3,475 acres not analyzed as wilderness would be managed in accordance with the Escalante MFP as described for the No Action Alternative. The 39,256-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Man-

agement Policy" as described in the All Wilderness Alternative. Upon designation, acquisition of four State sections within the wilderness would be likely. The State of Utah has identified four adjacent State sections for possible exchange. Two other State sections adjacent to the ISA probably would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only.

A summary of specific actions under this alternative follows.

- The 39,256-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Currently, no mining claims are located in the wilderness area. Should any be located prior to wilderness designation, development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809), with consideration given to wilderness values. Existing oil and gas leases, covering 20,725 acres, would not be reissued upon expiration unless a find in commercial quantities is shown. The 3,475-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of future mining claims could occur if the claims are valid. Development of existing oil and gas leases (3,475 acres) and future leases could occur without concern for wilderness values. The area not designated wilderness would be managed as oil and gas leasing Category 1 (standard stipulations) on about 2,700 acres and Category 3 (no surface occupancy) on about 775 acres.
- Domestic livestock grazing would continue as authorized in the Escalante MFP. The 800 AUMs in the wilderness area would remain available to livestock as presently allotted. The existing 1 mile of fence could continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. Range developments would be allowed after designation only if necessary for the protection and effective management of the range and/or wilderness resources, and if

PHIPPS-DEATH HOLLOW ISA

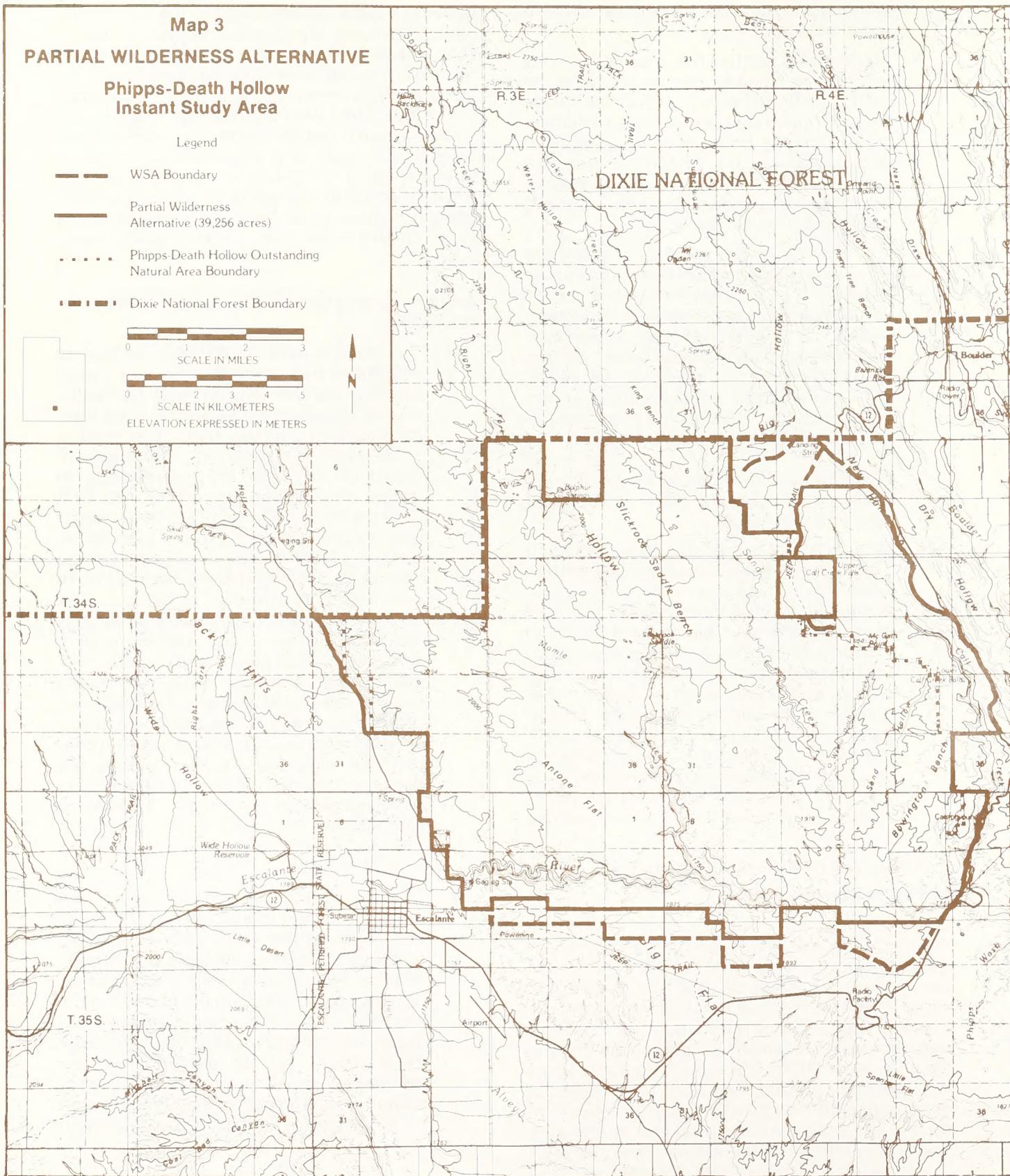
Map 3 PARTIAL WILDERNESS ALTERNATIVE Phipps-Death Hollow Instant Study Area

Legend

-  WSA Boundary
-  Partial Wilderness Alternative (39,256 acres)
-  Phipps-Death Hollow Outstanding Natural Area Boundary
-  Dixie National Forest Boundary



ELEVATION EXPRESSED IN METERS



wilderness protection criteria are met. The 2 miles of proposed fences would be in the nondesignated portion of the ISA. In the 3,475-acre nonwilderness area, grazing use of 84 AUMs would also continue as authorized in the MFP.

- In the 39,256-acre wilderness new water resource facilities or watershed activities (other than rangeland developments) would be allowed only if compatible with wilderness, needed to correct imminent hazards to life and property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the 3,475-acre nonwilderness area, water resource developments would be allowed if in accordance with the MFP. None are now planned.
- In the wilderness area, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the nonwilderness area, wildlife transplants or improvements would be allowed if in accordance with the MFP without consideration for wilderness values.
- The entire 39,256-acre wilderness area would be closed to ORV use. In the 3,475-acre undesignated area, with the exception of 483 acres that would remain closed to ORV use, the unit would be open to vehicular travel. About 9 miles of existing vehicular ways within the wilderness portion would no longer be available for vehicular use except for purposes identified under the All Wilderness Alternative.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 39,256-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface, or the edge of the right-of-way for State Highway 12, whichever is greater.
- Harvest of forest products in the wilderness area would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The area not designated wilderness would be open to woodland harvest.

- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The 3,475 acres not designated as wilderness would also be managed as Class I as currently set forth in the Escalante MFP.
- Within the wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be by hand or aerial means. In the area not designated, measures of control would be taken without wilderness considerations.
- In the nonwilderness area, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the wilderness area, such activity would be allowed by permit if compatible with wilderness preservation. However, activity would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the nonwilderness area hunting would be allowed subject to applicable State and Federal laws and regulations. In the wilderness area, use would be allowed subject to applicable laws and regulations, but would be limited to nonmotorized means.
- In the nonwilderness area, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the wilderness area, control of predators would be allowed for the same purposes, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes the main environmental impacts that would result from implementation of the alternatives. Those resources that would be

PHIPPS-DEATH HOLLOW ISA

TABLE 1 SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES PHIPPS-DEATH HOLLOW ISA

Resource	Alternatives		
	No Action	All Wilderness (42,731 Acres)	Partial Wilderness Designation (39,256 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 500 tons of uranium oxide. An unknown amount of carbon dioxide may also be present in the ISA.	Oil, gas, and carbon dioxide likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. Due to the low likelihood of recovery of oil, gas and uranium, and the uncertainty of the occurrence and future use of carbon dioxide, the loss of development opportunity would probably not be significant.	Although likelihood is low, up to 0.2 million barrels of oil, 1 billion cubic feet of natural gas, and 40 tons of uranium oxide could be recovered. An unknown amount of carbon dioxide might also be recovered.
Wildlife	About 0.4 percent of the ISA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.	Wildlife in the designated area would benefit from solitude. About 0.4 percent of the nondesignated portion could be disturbed by mineral and energy exploration and development, which could adversely affect wildlife habitat.
Livestock	Grazing of 884 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of 2 miles of fence, could be constructed.	Grazing of 884 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. New developments proposed in the future might not be allowed. The proposed 2 miles of fence would probably be allowed.	Grazing of 884 AUMs and maintenance of existing developments would continue. The proposed 2 miles of fence would be in the undesignated portion and could be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 180 acres.	Visual quality could be impaired on up to 20 acres.	Visual quality could be impaired on up to 33 acres, including 18 acres in the designated portion. All of the Class A scenery would be in the designated portion and would be protected by the reduced potential for disturbance.
Recreation	ORV use would continue on 10 miles of ways at current levels. Overall recreational use could increase from the present 16,800 visitor days per year to 25,032 over the next 20 years.	The ISA, including 10 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV recreational use could continue on 1 mile of ways in the undesignated portion.

**TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
PHIPPS-DEATH HOLLOW ISA**

Resource	Alternatives		
	No Action	All Wilderness (42,731 Acres)	Partial Wilderness Designation (39,256 Acres) (Proposed Action)
Wilderness Values	Wilderness values could be lost on up to 180 acres (0.4 percent of the ISA), but the values in the rest of the ISA would not be affected.	Wilderness values would be protected, except on up to 20 acres (less than 0.1 percent of the ISA) which may be disturbed by development of valid mineral rights.	Wilderness values would be protected, except on 18 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on 0.4 percent of the 3,475 acres not designated. Overall, wilderness values could be lost on 0.08 percent of the ISA. About 93 percent of the area meeting the standards for naturalness and all of the area meeting the standards for outstanding opportunities for solitude and primitive recreation would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be inconsistent with Garfield County's recommendation for partial wilderness. It would be consistent with State of Utah plans and policies and the current BLM Escalante MFP.	This alternative would be inconsistent with Garfield County's recommendation for partial wilderness. It would be consistent with State policy if lands were exchanged. Designation would constitute an amendment of the BLM Escalante MFP.	This alternative would be about the same as the All Wilderness Alternative, except that it would be consistent with Garfield County's recommendation for partial wilderness.
Socio-economics	Annual local sales of less than \$86,850 and Federal revenues of up to \$76,288 would continue. A potential reduction of up to \$41,400 per year in Federal revenues would result from phasing out oil and gas leases to meet Category 4 restrictions.	Annual local sales of less than \$86,850 and Federal revenues of up to \$1,238 would continue, but Federal revenues of up to \$31,200 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the ISA.	The effects of this alternative would be the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$20,775.

affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The Phipps-Death Hollow ISA and surrounding area have been designated Class II under the Prevention of Significant Deterioration (PSD) regulations. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of the BLM (USDI, BLM, 1982b). The nearest Class I air quality area is Capitol Reef National Park, approximately 18 miles to the east of the ISA.

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit; however, data collected from various sites (Page, Arizona and Four Mile Bench approximately 50 miles south of the ISA) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations. Visibility is excellent.

Geology

The Phipps-Death Hollow ISA lies within the western part of the Canyonlands section of the Colorado Plateau Physiographic Province (Thornbury, 1965).

Elevations in the ISA range from approximately 7,600 feet above sea level along the Escalante monocline on the western side of the ISA to approximately 5,400 feet in the Escalante River Canyon. The major drainages, which include Death Hollow/Mamie Creek, Sand Creek, Pine Creek, and Calf Creek, bisect the ISA in a north-to-south axis. Five natural bridges and arches occur along these drainages. The Escalante River runs from west to east and borders the southern boundary of the ISA. Steep-walled canyons cutting into Paleozoic and Mesozoic sedimentary rocks are the major landforms in this section. The dominant structures are gently dipping monoclines associated with broad upwarps and basins.

Rocks of Triassic and Jurassic Age, totaling about 2,000 feet in thickness, and thin deposits of Quaternary Age outcrop in the ISA. The underlying Mesozoic and Paleozoic rocks in the region are more than 4,000 feet thick (Weir and Lane,

1981). Grayish-orange, cross-bedded Navajo Sandstone forms the most extensive outcrop. Younger units are exposed along the northern, western, and southern fingers of the area. The base of the Navajo and the upper part of the underlying Kayenta Formation are exposed only in canyons near the east edge of the ISA.

In most of the area the rocks dip gently to the south or southeast. The major folds are the Boulder-Collet Canyon or anticline where the southwestern flank is the steeply dipping Escalante monocline. The rocks are completely jointed but are not displaced by faults.

Soils

The major part of the ISA is rockland. Rockland consists of exposed bedrock, mostly sandstone and limestone, with gentle to steep slopes. These areas have very little vegetation with native vegetation growing only in crevices and pockets of soil material (Wilson et al., 1975). Runoff is rapid and sediment production is low.

Sandy soils occur in the northeast corner of the upper Calf Creek drainage. Runoff and sediment production from these soils are low and they are subject to soil blowing. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	12,393	29	16,110
Slight	0.6	14,528	34	8,720
Stable	0.3	15,810	37	4,740
Total		42,731	100	29,570

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

The existing vegetation in the ISA consists mostly of pinyon-juniper although some ponderosa pine occurs in the area. No sensitive, threatened, or endangered plants or species under review for threatened or endangered status are known to exist in the ISA.

Riparian vegetation can be found along the following streams: Escalante River, Pine Creek, Sand Creek, Sweetwater Creek, Calf Creek, Mamie Creek, Death Hollow, and Willow Patch Creek (approximately 65 acres of riparian vegetation). A relict plant community with lush vegetation and hanging gardens occurs in Death Hollow. Calf Creek also contains hanging gardens.

The Phipps-Death Hollow ISA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation type that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The Phipps-Death Hollow ISA contains approximately 40 miles of perennial streams, all of which are in the Escalante River drainage. These streams include the Escalante River, Calf Creek, Pine Creek, Sand Creek, Sweetwater Creek, Willow Patch Creek, Mamie Creek, and Death Hollow. Flash floods are common on these streams from July to mid-September during the thunderstorm season. Water quality samples indicate that organic enrichment and sedimentation resulting from flooding are the prevalent water quality problems. All water quality indicators measured are within Utah State Water Quality Standards for cold-water fisheries. Bacteria levels are generally low.

Six undeveloped springs exist in the ISA. Primary uses are livestock and wildlife watering.

Water rights within or adjacent to the ISA boundary total 126.48 acre-feet annually. The Pine Creek Irrigation Company has the water rights to 37.20 acre-feet from Pine Creek to irrigate 390.50 acres of cropland adjacent to the western boundary of the ISA (Utah Division of Water Resources, 1969). Private individuals have the water rights to 5.15 acre-feet of water from Pine Creek for livestock water. The BLM has the rights to 69.43 acre-feet for livestock watering. The State of Utah has the water rights to 14.7 acre-feet of water on State sections enclosed within the boundaries of the ISA (Utah Division of Water Resources, 1969).

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA/ISA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 2 was assigned to the Phipps-Death Hollow ISA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the ISA. This rating may not be accurate due to the recent discovery of carbon dioxide on adjacent National Forest land.

If the ISA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The energy and mineral resource rating summary is given in Table 3. (No rating for carbon dioxide was given by SAI, 1982.)

**TABLE 3
Mineral and Energy Resource Rating Summary**

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil, less than 60 billion cubic ft. of gas
Uranium	f2	c3	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f2	c4	.05 - 15 megawatts

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the ISA (Federal Emergency Management Agency, 1983).

LEASABLE MINERALS

Oil and Gas

This unit has a low certainty (c1) for the occurrence of small-sized oil and gas fields (f2). Such fields would probably be associated with the Collet and Escalante anticlines in the eastern and western portions of the ISA, respectively. However, the probability for the occurrence of such fields is low, and it is unlikely that more than one or two fields would be associated with these structures. Fields of this size in Utah typically have an areal extent of about 2,500 acres and require about 160 acres for roads, pads, etc.

Under the current land use plan 32,331 acres are protected from oil and gas activities and are closed or suspended to oil and gas leasing. A roughly 1-mile-wide perimeter around this area is open to leasing with no surface occupancy. This area, covering approximately 7,700 acres, may be explored by directional drilling from areas allowing surface occupancy. The remaining 2,700 acres of the ISA are open to leasing subject to the standard and wilderness stipulations.

There are presently 33 oil and gas leases covering approximately 57 percent of the tract (24,200 acres). All areas available for leasing within the tract are covered by leases and lease applications. In the 32,331-acre area suspended or closed to leasing, 13,950 acres have been leased under a no surface occupancy requirement with an understanding that the resource cannot be exploited. These leases were issued as an alternative to rejection and for blocking purposes. However, as of July 1981, leasing of suspended or closed areas for blocking purposes was halted and is not expected to be resumed.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs or ISAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA. Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Ten of the 33 oil and gas leases (8,400 acres) in the WSA are pre-FLPMA.

Carbon Dioxide

A large carbon dioxide deposit (current estimates range up to 4 trillion feet) was discovered on the crest of the Escalante anticline in a well drilled in 1960, about 7 miles north of the ISA. A total of five wells have been drilled on FS land on the anticline and all have encountered carbon dioxide. Two of the wells drilled on the anticline are about 4 and 5 miles north of the ISA, respectively. On March 12, 1984, the Escalante Known Geologic Structure (KGS) was expanded significantly down structure on the Escalante anticline to within 1 mile of a dry hole located in Section 10, Township 35 South, Range 3 East. The expanded KGS contains 80,010.39 acres, of which 13,720 acres in the southernmost portion are located in the ISA.

The expanded KGS has been drawn larger than the limits of closure based on surface expression of the anticline, subsurface seismic work by oil companies, and similarities with the Upper Valley Field (which extends down the axis of the Upper Valley anticline much further than the limits of the closed structure). However, since no drilling has occurred south of the aforementioned wells within the KGS, the actual limits of production are not known. Therefore, that portion of the KGS located within the ISA can only be considered presumably productive.

Whether or not carbon dioxide deposits have an economic value currently depends largely on its usage in enhanced oil recovery and as a medium to carry coal slurry. Recent technological development in enhanced oil recovery, whereby depleted oil fields may be rejuvenated through the injection of compressed carbon dioxide into the oil-bearing formations could open up significant new markets for carbon dioxide.

LOCATABLE MINERALS

There are no mining claims in the ISA.

Uranium

According to the U.S. DOE (1983) the entire ISA is within an area considered to have a moderately high certainty (c3) for the occurrence of small deposits of uranium (f2). This area is identified by the U.S. DOE as the Chinle Formation favorable area. Favorable areas are defined by the U.S. DOE as geographic areas in which available data indicate the existence of geologic environments favorable for the concentration of uranium. Classification of an area as favorable does not imply the presence of a deposit, but implies only a potential to contain such a deposit.

A small deposit of this type (f2) would have an estimated areal extent of about 100 acres (based on a maximum size of 500 tons, a minimum grade of 0.01 percent, and an average thickness of 5 meters). Any mining development would be by underground methods. Although surface requirements for an underground mine of this size are difficult to estimate, it is doubtful that they would exceed the areal extent of the deposit and typically are much less. Developmental drilling, particularly a closely spaced program designed to delineate a complex ore body, would likely cover the entire areal extent of the deposit.

It should be noted that, since all of the favorable host rock in the ISA occurs at depths greater than 1,500 feet, it is unlikely that deposits of this limited size at these depths would represent potential economic deposits or have any significant probability of development.

Gypsum

A small portion of a gypsum deposit on the southwest side of the ISA lies within the tract. The deposit is presently unclaimed and, due to the presence of better deposits nearby, is not considered economically significant.

SALABLE MINERALS

Stream gravel and other loose rock material that could be used for construction occur within the ISA. These deposits are not unique or economically significant due to the presence of ample similar materials nearby. Under the current land use plan, material sale of sand and gravel is not allowed in Calf Creek Recreation Area.

Wildlife

The Phipps-Death Hollow ISA has habitat that could support approximately 50 species of mammals, 170 species of birds, 17 species of reptiles, 5 species of amphibians, and 6 species of fish. The birds are mainly seasonal residents or migrants while the other species are primarily residents. The ISA provides yearlong, winter, and important winter range for mule deer; however, deer numbers are low. The important winter range (approximately 21,200 acres) supports a wintering deer population that spends the remainder of the year on the Dixie National Forest. The riparian areas are the most important use areas for the resident populations. The Antone Flat area was designated especially for mule deer use in the late 1960s and is currently not utilized by livestock.

The ISA provides approximately 3,000 acres of important winter range for elk. The Utah Division of Wildlife Resources (UDWR) transplanted 159 elk into the Boulder Mountain elk herd unit in 1976-77. During years of heavy snowfall on the higher elevations of the Dixie National Forest, 50 to 80 elk may migrate onto winter range, which includes part of the ISA.

Cougars are present throughout the ISA in small numbers (probably less than 10). A few may be resident, but the majority are winter visitors. Cougars occur in the pinyon-juniper and riparian habitats as well as rocky and cliff areas. Cougars are usually found in close proximity to areas occupied by mule deer.

Two endangered species, peregrine falcon (*Falco peregrinus*) and bald eagle (*Haliaeetus leucocephalus*), are rare migrants and possibly winter visitors to the ISA. A peregrine falcon was seen along the Escalante River above Harris Wash in the Glen Canyon National Recreation Area (NRA) during April 1978. Bald eagles commonly winter on Lake Powell at the mouth of the Escalante River and may occasionally move up the river into the ISA.

PHIPPS-DEATH HOLLOW ISA

TABLE 4
Livestock Grazing Use Data

Allotment	Total Acres	Acres in WSA	Suitable ¹ Acres in WSA	Unsuitable ¹ Acres in WSA	AUM Grazing Preference in WSA	Livestock Permittes Using WSA
McGath Point	3,520	3,520	2,193	1,327	75	2
Salt Water Creek	11,520	11,520	5,103	6,419	119	1
Willow Gulch	11,860	9,005	7,309	1,696	582	2
Escalante River	79,209	1,830	790	1,040	24	1
Upper Cattle	129,391	1,414	1,057	357	84	12
Antone Flat	Unallotted	15,442	--	15,442	--	--
Total		42,731	16,450	26,271	884	18

Source: USDI, BLM, 1979a.

¹The suitability of an area for grazing is determined by a number of factors including steepness of terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available feed is not allocated for domestic livestock grazing.

At least seven other raptors are known to nest in the ISA, including the golden eagle, but only the American kestrel could be considered common. The UDWR (1982) list of sensitive species includes three species that occur in the ISA: Lewis woodpecker and western and mountain bluebirds.

The most important game fish occurring in the ISA are brown and rainbow trout. Death Hollow, Mamie Creek, Sand Creek, Pine Creek, and Calf Creek support trout populations. Rainbow and brown trout are not native to this area but have been introduced at various times by UDWR; however, they do not stock these waters on a regular basis.

The Colorado River cutthroat trout was native to this area but has probably been extirpated. The upper falls area of Calf Creek has been identified by BLM as suitable habitat for this species. During 1978, UDWR stocked the area between the upper and lower falls of Calf Creek with the Strawberry Lake strain of cutthroat trout.

There are no management facilities or proposed treatment areas for wildlife in the WSA.

Forest Resources

No significant forest resources occur in the ISA. Approximately 4,497 acres (Calf Creek Recreation Area) are closed to wood cutting. About 38,234 acres of the ISA are open to the collection of fuelwood; however, due to the remoteness of the area, access, and sparse vegetation, current use is minimal. Some post and fuelwood cutting

by local residents occurs in the northeast corner of the ISA (New Home Bench) adjacent to "cherry-stemmed" roads. The New Home Bench contains the best woodland stands for fuelwood and posts in the ISA.

Livestock and Wild Horses/Burros

The ISA encompasses three livestock grazing (cattle) allotments (McGath Point, Salt Water Creek, and Willow Gulch) and small portions of two others (Escalante River and Upper Cattle). Table 4 summarizes livestock use in the ISA. Table 5 identifies existing and proposed range improvements in the ISA.

TABLE 5
Existing and Proposed Range Improvements

Allotment	Existing Range Improvement	Proposed Improvement
McGath Point	None	None
Salt Water Creek	None	0.25 Mile of Fence
Willow Gulch	0.75 Mile Fence	2 Miles of Fence
Escalante River	0.25 Mile of Fence	None
Upper Cattle	None	None
Antone Flat	None	None

Source: USDI, BLM, 1979a.

Visual Resources

The BLM visual resource inventory classified approximately 38,931 acres as Class A and 3,800 acres as Class B scenery (refer to Appendix 7 for a description of BLM's VRM system). The ONA portion of the ISA was designated in recognition of its scenic values, and most of the ISA possesses a visual resource of unquestionable high quality. This landscape contains the extremely rugged, red-and-white sandstone canyonlands and canyons of the Escalante River and its Death Hollow tributary. The ISA also includes two waterfalls and five natural bridges and arches. The ISA is a VRM Class I management area.

Cultural Resources

The Phipps-Death Hollow ISA contains numerous sites with historical and archaeological significance. Areas of historical significance include the Boulder Mail Trail, Boynton Road, Old Boulder Road, Washington Phipps Grave, and the route of the Escalante-Boulder telephone line.

Based on surveys (USDI, BLM, 1978a), archaeological site densities on approximately 25,450 acres of the ISA are medium (11 to 49 sites per 23,000 acres). Site densities on approximately 17,280 acres are not known. Twenty-one archaeological sites have been identified in the ISA; these include one habitation site, six campsites, and fourteen different petroglyph/pictograph sites. One site, the Friendship Cove Pictograph, has been nominated to the National Register of Historic Places.

Recreation

The Phipps-Death Hollow ISA offers important opportunities for both primitive and nonprimitive types of recreation use. The ISA contains the Phipps-Death Hollow ONA and the undeveloped portion of the Calf Creek Recreation Area, both of which offer opportunities such as hiking, backpacking, camping, sightseeing, and fishing. The ISA received approximately 16,800 visitor days of total recreation use in 1981. The primary recreation use period is from March to November. Approximately 8,550 visitor days are associated with primitive recreation use such as hiking, backpacking, photography, etc. The remaining recreation use is mainly sightseers viewing the area from vehicles and campers from the adjacent highway and campground.

Phipps-Death Hollow was designated an ONA on December 23, 1970. It contains 34,288 acres and is managed to preserve its scenic values and natural wonders. All but 12 acres of the ONA are located inside the ISA. Phipps-Death Hollow ONA is segregated from sale under Section 2455 of the Revised Statutes (*Federal Register*, December 23, 1970). Calf Creek was designated as a Recreation Area on December 23, 1970. The intensive use area contains a developed campground that is not included in the ISA.

The ISA is occasionally used by commercial outfitters as an outdoor classroom. The same outfitters also use the Steep Creek WSA and North Escalante Canyons/The Gulch ISA.

ORV use is closed on those 38,773 acres of the ISA that correspond to the ONA and Recreation Area. ORV use on the remaining 3,958 ISA acres is minimal. A major recreation use of the ISA is the 6,750 visitor days of sightseeing use attributed to approximately 121,000 motor vehicle tourists traveling Utah Highway 12 between the communities of Boulder and Escalante. This use is particularly heavy on the Hogsback portion of the route where overviews of Calf Creek Canyon and much of the ISA are obtainable. Sightseeing in Calf Creek Canyon by car campers at the Calf Creek Campground is also considered a major recreation use (1,500 visitor days) of the ISA.

The Escalante River was nominated for study under Section 5(d) of the Wild and Scenic Rivers Act by the Secretaries of Interior and Agriculture on September 11, 1970. The BLM portion of the river between the Town of Escalante and the Glen Canyon NRA meets the scenic, lack of development, and other criteria established for wild, scenic, or recreational river designations. The natural values of the Escalante River have been identified through the existing ONA designations. The BLM must, as part of its environmental protection process, avoid or mitigate adverse impacts to the river and consult with the National Park Service (NPS) before taking any actions which could foreclose wild, scenic, or recreational river status (Council on Environmental Quality, 1980).

Approximately 43 miles of hiking routes are available to recreationists in the ISA. These routes are associated with the major drainages in the area such as the Escalante River, Death Hollow, Sand Creek, and Calf Creek. Trailheads for these hiking routes are located at the Utah Highway 12 crossing of the Escalante River, Calf Creek Campground, the Town of Escalante, and on the Dixie National Forest at the head of Death Hollow. Although several drainages (including Death

PHIPPS-DEATH HOLLOW ISA

Hollow, Mamie Creek, Sand Creek, Pine Creek, and Calf Creek) offer sport-fishing opportunities for brown and rainbow trout, none of these streams receive substantial fishing pressure.

Wilderness Values

SIZE

Phipps-Death Hollow ISA encompasses 42,731 acres. It is approximately 9 miles long (north to south) and 11 miles wide (east to west).

NATURALNESS

Naturalness is defined as an area where the evidences of man are substantially unnoticeable to the average visitor and where individual minor imprints of man exhibit no cumulative impact that is substantially noticeable. The entire WSA meets the *Wilderness Act* criteria for naturalness. Imprints of man that remain in the ISA are the gauging station on the Escalante River about 1 mile east of Escalante, 10 miles of ways, and 7.5 miles of abandoned telephone line. These imprints involve less than 1 percent of the ISA and are substantially unnoticeable. In the Phipps-Death Hollow ISA, the high quality of naturalness has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b) decision. No additional imprints have occurred in the ISA as a result of impairing uses or activities allowed under the BLM's *Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

Outstanding opportunities for solitude are present in the ISA due to the deep winding canyons of five major drainages that provide excellent topographic screening. The Escalante River, Calf Creek, Sand Creek and three tributaries (Mamie Creek, Death Hollow, and Right Fork of Death Hollow) have all created entrenched and winding canyons. Although each of the canyon drainages is characterized by an extremely high proportion of slickrock, there remains a tremendous variety of canyon landscapes. Some canyons such as Calf Creek have cut inner gorges in slickrock bowls or basins. The Escalante River canyon is a very deep and large canyon. The Mamie Creek-Death Hollow drainage exhibits inner gorges and narrows, perched canyons, and numerous slot and ridge features. The North Fork-Death Hollow area is very similar to the Mamie Creek area but the inner gorge exhibits more narrows and greater entrenchment. Regardless of the type of canyon, the canyon areas in the ISA all offer excellent topographic screening and outstanding oppor-

tunities for solitude. Outstanding opportunities for solitude derivative of canyons are present on approximately 19,900 acres of the ISA.

The opportunity for solitude on the benches within the ISA is outstanding where the geographic isolation is the greatest. The Antone Flat bench includes the entire Mamie Creek-Pine Creek divide from Antone Flat to the Dixie National Forest boundary. This bench exhibits extreme geographical isolation. Slickrock Saddle Bench below Slickrock Saddle exhibits a similar degree of isolation. The opportunity for solitude on Slickrock Saddle Bench above Slickrock Saddle diminishes toward the Dixie National Forest boundary. Below the confluence of Sweetwater and Sand Creeks, isolation provided by canyon cliffs is sufficient to provide an outstanding opportunity. Bowington Bench is completely isolated by the Calf Creek and Sand Creek Canyon cliffs and the McGath Point Bench cliffline. Bowington Bench, in its entirety, possesses outstanding opportunities for solitude. Outstanding opportunities for solitude exist on 16,100 acres of the benches.

A visitor to the ISA can easily find seclusion in many parts of the ISA. Outside sights and sounds are an insignificant influence on solitude. Visitor encounters are reduced by the deep winding canyons on approximately 19,900 acres. Since the rugged topography channels most recreation use into the canyon bottoms, visitor encounters on the benches are rare.

In summary, it is felt that approximately 36,000 acres or 84 percent of the ISA present opportunities that meet the outstanding opportunity criterion for lands under wilderness review. The remaining 6,731 acres do not meet the criterion.

PRIMITIVE AND UNCONFINED RECREATION

The ISA offers outstanding opportunities for camping, backpacking, hiking, horseback riding, and sightseeing for cultural and geological features. It is the quality of these individual recreational activities that contributes to this outstanding opportunity.

The foot and horse travel activities are of high quality throughout most of the ISA. The overall scenic geology of the ISA is of extremely high quality. In this sense, most of the ISA represents a sightseeing destination. There are also site-specific sightseeing destinations derivative of this scenic geology. The Upper and Lower Calf Creek Falls, Death Hollow Canyon, Escalante Natural Bridge, and the Escalante River Canyon are examples.

Sightseeing for historical and archaeological features can occur over much of the ISA because of the number, wide distribution, and linear configuration of many of these features. Historic routes include the Boulder mail trail, first Boulder-Escalante telephone line, Old Boulder Road, and the Boynton Road. Archaeological sites have been identified in Calf Creek, Death Hollow, Sand Creek, and the Escalante River.

Although the sightseeing opportunity is one element contributing to the quality of hiking, horseback riding, and backpacking activities, other factors are also influential. The availability of a variety of easy to challenging experiences enhances the hiking activity. The backpacking activity is also enhanced by the varied degrees of difficulty of travel within the ISA. Fishing opportunities in Calf Creek and Death Hollow also contribute to the hiking, backpacking, and horse travel activities.

The availability of a large number of route alternatives is the most important factor contributing to the outstanding quality of hiking, backpacking, and horse travel activities. The ISA offers an array of canyon route options for day use hiking and horseback riding. Because it is not limited by time or by riding terrain, the backpacking activity possesses even more route options. These options include all of the canyon systems and the Pine Creek-Death Hollow divide, Slickrock Saddle Bench, Bowington Bench, upper Calf Creek basin, and a portion of Big Flat. Certain portions of these bench areas are also within the range of the dayhiker. The backpacking activity in the ISA is enhanced by the continuation of the Death Hollow Canyon and the Pine Creek-Death Hollow hiking routes into the Box-Death Hollow Wilderness Area.

It is felt that the primitive recreation opportunities on 36,800 acres or 86 percent of the ISA meet the outstanding criterion for lands under wilderness review while 5,931 acres do not meet the criterion.

SPECIAL FEATURES

Because the *Wilderness Act* definition of wilderness does not require that scientific, educational, scenic, or historical values be present, these characteristics are considered optional wilderness values or special features. The Phipps-Death Hollow ISA possesses educational, scenic, and historical values.

An interpretive brochure has been developed in conjunction with the Lower Calf Creek Falls trail in Calf Creek Canyon. The trail includes that area of the Calf Creek Canyon between the Lower

Falls and the campground. This portion of Calf Creek Canyon possesses significant educational values because of the trail and brochure use from campers at the campground. Approximately 200 acres exhibit educational values.

Although the Phipps-Death Hollow ISA is located on the upper reaches of the Escalante River, the ISA possesses certain landscape features not found in the middle and lower portions of this drainage. There is a greater preponderance of white-and-yellow Navajo Sandstone here. The deepest canyons in the drainage are also present in the ISA. The ISA possesses three distinct landscape components. All possess significant scenic values.

The Escalante River canyon in the ISA reaches depths of 1,100 feet between the mouth of Mamie Creek and the community of Escalante. In this area, the canyon walls are rough and broken. The canyon is narrow and exhibits many meanders. The remainder of the Escalante River canyon is a wider canyon exhibiting the more typical red sandstone walls and an abundance of riparian vegetation contributing a green ribbon effect. The canyon possesses impressive scenic values throughout its length, and approximately 3,600 acres of scenic value are present. Escalante Natural Bridge, a 130-foot-high bridge with a span of 100 feet, is located on the south wall of the canyon.

Scenic values are present in the bench and canyon areas between Slickrock Saddle Bench and Calf Creek Canyon. Included in this area are Bowington and Slickrock Saddle Benches, McGath Point, Sand Creek and its Willow Patch, Sand Hollow and Sweetwater Creek tributaries, and the Calf Creek basin. Where sandstone outcroppings and points are present on the benches, the scenic values are high. However, the highest values occur in the Calf Creek Canyon area where red alcoved walls, two waterfalls, and extensive expanses of white slickrock are present. Lower Calf Creek Falls is 126 feet high and Upper Calf Creek Falls is 86 feet high. Approximately 15,100 acres of scenic value are present.

The Death Hollow area of this ISA exhibits some of the highest scenic values found anywhere in the Escalante River drainage. Death Hollow is the name given the area carved by Mamie Creek and the Right Fork of Mamie Creek. Although the area is complex topographically, it can be divided into four general landscapes. The Death Hollow canyon is deep and meandered. Narrows at depths of 1,000 feet occur in certain sections of the canyon. Above the canyon, Mamie Creek has

created an extensive upper basin of exposed sandstone. This is an extremely dissected area of canyons, tanks, and other formations. Ponderosa pine is present in suitable locations. Antone Flat, a sagebrush park in the southern portion of this area, is one of the few places where soil cover remains. The Escalante monocline forms the divide between Mamie Creek and Pine Creek. The Pine Creek side is a scenic, dissected, 1,000-foot rock face. The top of the monocline is a narrow ridge covered with ponderosa pine. The Death Hollow area exhibits about 14,500 acres of scenic value. In total, approximately 33,300 acres of the ISA possess scenic values. Historical values include the Boulder Mail Trail, Boynton Road, Old Boulder Road, Washington Phipps Grave, and the Escalante-Boulder telephone line. The Boulder Mail Trail was used to carry mail and goods between the Towns of Escalante and Boulder. Much of the trail is still visible, especially where it was necessary to construct the trail through slickrock. The trail has been nominated to the National Register of Historic Places and is becoming a popular backpacking route in the ISA. Approximately 13 miles of the trail are present in the ISA.

The Boynton Road was constructed in 1909 as a shortcut between Escalante and Salt Gulch. The road was abandoned after 2 years when water washed away portions of the road. The road is visible over approximately 90 percent of its 10-mile route. The Old Boulder Road was the main route between Escalante and Boulder until the Civilian Conservation Corps built the Hell's Backbone Road and Highway 12 in the 1930s. Approximately 1.5 miles of the road are within the ISA. In 1911 the Forest Service constructed the first telephone line between Escalante and Boulder. This line provided the first telephone service to the area and was used until 1955 when it was replaced by a microwave system. Most of the line between Antone Flat and Sand Creek is still visible. The wire is missing between Sand Creek and Boulder. Approximately 7.5 miles of the route are within the ISA but are only partially evident.

The Friendship Cove Pictograph is an archaeological site that has been nominated to the National Register of Historic Places.

Land Use Plans and Controls

The ISA is comprised of public and State lands. Public lands in the ISA lie within the BLM Escalante Planning Unit and are being managed

according to the land use decisions of the Escalante MFP (USDI, BLM, 1981a). Principle uses are recreation and grazing. Two thousand five hundred and sixty acres of State land (four sections) are enclosed within the boundaries of the ISA. Physical access is not available to these lands.

On September 11, 1970 the Secretary of the Interior identified the Escalante River from Lake Powell to its source as a candidate Wild and Scenic River under Section 5(d) of the Wild and Scenic River Act. The Escalante River possesses one or more values that may be of national significance. The ISA contains 14.9 miles of the Escalante River.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers portions of this WSA. The master plan recognizes that the county possesses "... Some of the most spectacular scenery in the United States ... The County is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs/ISAs and 31,600 acres in one Forest Service unit be recommended for wilderness. Included in the acres for wilderness designation are 39,256 acres in the Phipps-Death Hollow ISA. The county plan recommends that the remaining lands within the county be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation. The County's position is that the southern boundary should be adjusted to conform to the boundary of the ONA. The northeast portion of the ISA (New Home Bench) should also be deleted from further study to alleviate potential management problems adjacent to the Boulder Airfield and to allow for capital facilities expansion.

The Phipps-Death Hollow ISA is contiguous to the Box-Death Hollow Wilderness Area administered by the Forest Service.

Socioeconomics

The Phipps-Death Hollow ISA is located in Garfield County, Utah.

DEMOGRAPHICS

Garfield is a rural county having an average population density of less than one person per square mile. This density is very low when compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the popula-

tion in this county (3,673 persons) is concentrated in small communities rather than being evenly distributed throughout the area.

The community of Escalante lies along a major access route to the Phipps-Death Hollow ISA, Utah Highway 12. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is a gateway and service area for visitors to this ISA.

EMPLOYMENT

The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (18 percent), and services (13 percent). Table 6 presents employment and personal income for Garfield County.

TABLE 6
1980 Employment and Personal Income
Garfield County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	2,143	24,792
Proprietors	349	2,637
Farm Proprietors	209	807
Nonfarm Proprietors	140	1,830
By Industry Source	-	-
Farm	27	949
Nonfarm	1,767	23,843
Private	1,332	19,049
Ag. Serv., For., Fish., and Other	(L)	79
Mining	208	4,222
Construction	379	5,536
Manufacturing	247	3,294
Non-Durable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	84	84
Wholesale Trade	(L)	96
Retail Trade	126	1,302
Finance, Insurance, Real Estate	16	189
Services	270	2,786
Government and Government Enterprises	435	4,794
Federal, Civilian	140	1,656
Federal, Military	24	64
State and Local	271	3,074

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the nongovernment

employment and income in the area is based in the agriculture and services sectors. This is based on the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

INCOME AND REVENUES

Economic-related activities in the ISA include mineral exploration, mineral leasing, livestock production, woodland production, and recreation. Table 7 summarizes local income and Federal revenues from the ISA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 7
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$72,600
Mineral Production	0	0
Livestock Grazing	\$17,680	\$1,238
Woodland Products	0	0
Recreational Use	Less than \$68,880	\$450 ²
Total	Less than \$86,560	Up to \$74,288

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

²Part of a total of \$1,350 in revenue received from commercial organizations also using the North Escalante Canyons/The Gulch ISA and Steep Creek WSA.

No oil and gas or mineral production has occurred in the ISA. Therefore, mineral and energy resource production from the ISA has not contributed to local employment or income.

Eighteen livestock operators have a total grazing privilege of 884 AUMs within the WSA. If all this forage were utilized, it would account for \$17,680 of livestock sales and \$4,420 of ranchers' returns to labor and investment.

Some woodland products have been harvested from the ISA; however, the harvests were small and insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA's nonmotorized recreational use is high

but related local expenditures are low and could only be significant to the commercial outfitters who currently use the ISA. The ISA's motorized recreational use is moderate when considering those who view this area from Highway 12 and Calf Creek Falls Campground. However, related local expenditures are low. The actual amount of income generated locally from recreational use in the ISA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Phipps-Death Hollow ISA is estimated as about 16,800 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Garfield County.

The ISA generates Federal revenues from mineral leases, livestock, and recreation sources (refer to Table 7).

Thirty-three leases in the ISA cover approximately 24,200 acres. At \$3 per acre, lease rental fees generate up to \$72,600 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the ISA are unknown; however, the permittees in the WSA can use up to 884 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$1,238 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

Recreation use permits are issued to commercial organizations who use Phipps-Death Hollow ISA plus the North Escalante Canyons/The Gulch ISA and Steep Creek WSA. Approximately \$1,350 in revenue is collected for all three areas. It is assumed that each area accounts for \$450 in Federal revenue.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for all Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this document.
2. Future users in the ISA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs and ISAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the ISA. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, which includes carbon dioxide, and locatable mineral exploration and development, even though part of the area would be open to resource use and development without control for wilderness protection. The degree of future development is unknown but would probably be low due to the ISA's rough terrain and low resource potential. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: oil and gas, 160 acres; and uranium, 20 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The ISA would continue to be managed by the State of Utah as a PSD Class II area. If oil and gas and uranium are developed, air quality would be reduced up to the PSD Class II limitations. Disturbance of 180 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with oil and gas exploration and development activities would probably not exceed 180 acres. This would not significantly affect geology.

SOILS

It is estimated that up to 180 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 180 acres would increase from 234 cubic yards/year to 486 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the ISA would increase by approximately 252 cubic yards (0.8 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible.

VEGETATION

The anticipated maximum of 180 acres disturbed would not significantly impact the ISA's sparse vegetation. There are no sensitive, threatened, or endangered species in the ISA.

WATER RESOURCES

Since water quality of existing streams is greatly influenced by flash floods in the ISA, no significant sedimentation or change in total dissolved solids is expected to occur from the 252 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Escalante Planning Unit.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES**Leasable Minerals**

The potential for up to 10 million barrels of oil

in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) and an unknown amount of carbon dioxide exists within the ISA. These oil and gas resources could be explored and developed, subject to Category 1 and 3 stipulations and would not be affected by the adoption of this alternative. The existing leases on Category 4 areas (13,950 acres) would expire and not be renewed. Approximately 150 acres unleased for oil and gas could be leased. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur.

Locatable Minerals

Locatable mineral development could occur within the ISA. The entire ISA would remain open to mining claim location. The potential deposit of up to 500 tons of uranium oxide could be developed. Approximately 20 acres could be disturbed due to exploration and development of these locatable mineral resources. However, there are presently no mining claims and the likelihood of development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by improved livestock distribution because of the proposed fences. However, disturbance of an estimated 180 acres (0.42 percent of the WSA) through mineral and energy development and exploration would disrupt wildlife. Deer, elk, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Because of the small area of disturbance there would be no significant impact on threatened, endangered, or sensitive species.

FOREST RESOURCES

Since there are few trees other than scattered pinyon and juniper that have been utilized very little in the past, and since minimal surface-disturbing activities are anticipated, no significant harvest or loss of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante MFP. The 884 AUMs currently allocated in the ISA are controlled by 18 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard

for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the ISA, few, if any, changes in livestock management techniques are expected. The proposed 2 miles of fence could be developed and would result in improved livestock distribution.

VISUAL RESOURCES

Under this alternative, visual quality in the ISA would be protected by limitations placed on potential surface-disturbing activities (i.e., 38,800 acres would remain closed to ORV use, 32,331 acres would be closed to oil and gas leasing, and the entire area would be managed under VRM Class I objectives requiring that activities not be apparent).

However, under this alternative, 180 acres of mineral-related exploration and development are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the ISA as a whole.

CULTURAL RESOURCES

The nominated National Register site in the ISA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 180 acres by mineral exploration and development under this alternative could affect archaeological sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

Up to 180 acres could be disturbed by mineral and energy activities. Primitive recreational opportunities could be diminished on the affected areas.

The future trends in recreational use of the ISA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser,

1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 16,800 current visitor days per year to 25,032 visitor days at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 8,550 visitor days per year to about 12,740 visitor days per year over the next 20 years. Likewise, recreational activities utilizing vehicles for sightseeing would increase from 8,250 visitor days per year to 12,292 visitor days. Increases above the baseline rate will likely occur because of recreational use associated with the adjacent Box-Death Hollow Wilderness Area designated in 1984.

WILDERNESS VALUES

Under this alternative, wilderness values in the ISA would be protected by limitations placed on potential surface-disturbing activities (i.e., 38,800 acres would remain closed to ORV use, 32,331 acres would be closed to oil and gas leasing, and the entire area would be managed under VRM Class I objectives requiring that activities not be apparent).

However, under this alternative 180 acres of mineral exploration and development are possible. The related surface disturbance would result in a significant loss of naturalness, solitude, and outstanding opportunities for primitive, unconfined recreation throughout the ISA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for mineral development and related disturbance is low in this ISA.

LAND USE PLANS AND CONTROLS

This alternative would not be consistent with the *Garfield County Master Plan* which recommends 39,256 acres of this ISA be designated wilderness nor would it complement the adjacent Forest Service wilderness area. The No Action Alternative is based on implementation of the current BLM Escalante MFP and is, therefore, in conformance with it. This alternative would be consistent with State of Utah plans and policies which emphasize economic return.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the uranium and oil and gas in the ISA were developed, it could lead to a significant increase in employment and income for Garfield County.

There would be no livestock-related economic losses because the existing grazing use (884 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase 8,232 visitor days per year over the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the ISA would likely not be significant to the local economy.

Surface-impacting activities that would be allowed without designation could reduce the demand for commercial outfitter services now offered in the area. Decreased demand would be significant to the commercial outfitters who use the ISA but would be insignificant in terms of the local economy and other individual businesses.

Federal and State revenues from oil and gas leasing would be reduced because oil and gas leasing on Category 4 areas would expire and not be reissued. There would be a 13,800-acre reduction in leased area in the ISA that would result in a reduction of up to \$41,400 in oil and gas revenue.

All Wilderness Alternative (42,731 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 42,731-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing).

About 10 miles of existing vehicular ways in the ISA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The ISA would continue to be managed under VRM Class I.

For the following analysis it is assumed that mining claims would be staked, explored, and developed, causing an estimated 20 acres of disturbance within the ISA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed. (Appendix 10 lists surface disturbance assumptions and estimates for the ISA.)

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (20 vs. 180 acres), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, wildlife, forest, and cultural resources under the All Wilderness Alternative would be insignificant, as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Approximately 24,200 acres are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the ISA.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued. The exception to this could be development of these leases for carbon dioxide. However, for this alternative, it is assumed that these resources will not be developed.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas (3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable) and an unknown amount of carbon dioxide could be foregone under this alternative. However, due to the small size of the potential oil and natural gas deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and natural gas recovery. The amount of recoverable carbon dioxide that would be foregone is unknown.

Forest Service lands are being explored for carbon dioxide near the adjacent Box-Death Hollow Wilderness Area. It is estimated from current exploration work that approximately 4 trillion cubic feet of carbon dioxide exist in the area. How much, if any, is found within the ISA is unknown.

Locatable Minerals

There are presently no mining claims in the ISA; however, claims can be located up to the time of designation. Up to 500 tons of recoverable uranium oxide could occur within the ISA. Develop-

ment work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. The worst-case impact to minerals would be if the potentially recoverable minerals are not within valid mining claims filed before designation (the last date for mineral location within the ISA). In that case the potential for recovery of the uranium oxide would be foregone.

It is estimated that, if uranium deposits are located prior to designation, up to 20 acres could be disturbed due to exploration and development of these resources. Because production of these metals is not currently occurring and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of recoverable uranium resources.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante MFP. The 884 AUMs currently allocated in the ISA are controlled by 18 livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. It is assumed that the 2 miles of proposed fences could be built to meet wilderness protection criteria.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be less because existing oil and gas leases could expire, the entire area would be closed to ORV use, and the ISA would continue to be managed according to VRM Class I guidelines.

Under this alternative, the possible mineral-related surface disturbance would be reduced from 180 acres to 20 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface dis-

turbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives may not be met on large portions of the ISA. Because the potential for development of mining claims is low and the potential for disturbance is estimated to be only 20 acres, visual quality would probably not be reduced in the ISA as a whole.

CULTURAL RESOURCES

There could be potential for increased vandalism to cultural resources due to increased recreational use of the ISA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

As discussed for the No Action Alternative, recreational use of the ISA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity and use of the adjacent Box-Death Hollow Wilderness Area will lead to an undetermined increase in primitive recreational use above the baseline rate even if it is not designated. With designation, management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. The few visitor days of ORV associated activity in the WSA that could occur without designation would be eliminated from the WSA. Because there are other suitable ORV play areas in the vicinity of the ISA, ORV use would probably not experience an overall decline in the vicinity of the WSA. The recreational use associated with sightseeing from the adjacent highway and campground would not be affected by this alternative. Commercial organizations using the WSA could benefit. As recreation use increases other commercial operations based on primitive recreational activities could apply for use of the ISA.

Mineral-related surface disturbance on up to 20 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced.

Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, mineral exploration and development would not reduce the quality of the primitive recreational experience throughout the ISA.

Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 10 miles of ways within the WSA would be closed to ORV use.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values.

WILDERNESS VALUES

Designation and management of all 42,731 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive recreation. Solitude would be preserved on approximately 36,000 acres that meet and 6,731 that do not meet the standards for outstanding solitude. Naturalness would be preserved on all 42,731 acres and primitive and unconfined recreation would be preserved on 36,800 acres that meet and 5,931 acres that do not meet the standards for outstanding opportunities. The special features in the WSA (i.e., educational, scenic, and historical) would also be protected and preserved.

No development of leases is foreseen under this alternative. The anticipated mineral-related surface disturbance would, therefore, be reduced from 180 acres to 20 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of solitude and naturalness.

Outstanding opportunities for five recreational activities (backpacking, camping, horseback riding, hiking, and cultural, geological, and scenic sightseeing) would be preserved. Although recreational use could increase (refer to Recreation section above), back country use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreational values would be expected.

Designation of this ISA as wilderness would benefit the values and uses of the contiguous National Forest wilderness area. These two areas share a common watershed, canyon system,

extended recreation travel trails (hiking and horseback riding), and archaeological values.

Thus, it is concluded that wilderness designation and management of all 42,731 acres of the Phipps-Death Hollow ISA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude (outstanding on 3,600 acres) and primitive recreation (outstanding on 36,800 acres) except in localized areas affected by the surface disturbance related to mineral exploration. In the area as a whole, however, no significant loss of wilderness values would be expected.

LAND USE PLANS AND CONTROLS

This alternative would complement Forest Service planning for the Box-Death Hollow Wilderness Area, which is contiguous along the northern boundary of this ISA. The existing BLM Escalante MFP does not provide for wilderness designation. Congressional designation of the ISA as wilderness would be an amendment to the Escalante MFP.

The *Garfield County Master Plan* recommends only part of this unit be designated wilderness (39,256 acres). This alternative would conflict with their master plan. If State lands within the ISA are exchanged for lands outside the ISA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distributions.

Because of restrictions placed on the use of resources under wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the ISA (refer to Table 7) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

With the possible exception of carbon dioxide, the potential for mineral development in the ISA is low (refer to the Mineral and Energy Resources section for a discussion of the ISA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the ISA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action

Alternative. Because the potential for mineral development is low and the potential for carbon dioxide occurrence and use is uncertain, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$17,680 of livestock sales and \$4,420 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income. No such potential range improvements have been proposed.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would not impact the local economy.

Motorized recreational use within the WSA is light. The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses. The loss of 10,250 acres now leased in Categories 1 and 3 and 150 acres that could be leased would cause an eventual loss of up to \$31,200 per year of lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production and bonus bid revenues from new leases in KGS areas could also be foregone.

Partial Wilderness Alternative (39,256 Acres)

(Proposed Action)

The major activities that would occur in the designated portion of the ISA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 39,256-acre area designated as wilderness and the 3,475-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, mining claims would be located before designation and would eventually be explored and developed, causing an estimated 18 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities. Oil and gas leases would not be renewed.

It is assumed that, within the nondesignated area, only 15 acres would be disturbed sometime in the

future due to mineral and oil and gas exploration and development. Overall, 33 acres of surface disturbance would occur within the ISA, 147 acres less than under the No Action Alternative and 13 acres more than with the All Wilderness Alternative. (Appendix 10 lists the surface disturbance assumptions and estimates for the ISA.)

The analysis of the No Action Alternative, based on 180 acres of surface disturbance, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, water, wildlife, forest, and cultural resources. Therefore, these resources would not be significantly affected by disturbance with the Partial Wilderness Alternative, which assumes 33 acres of surface disturbance.

Restrictions on management and development methods within the ISA would result in essentially the same impacts on development of water sources, mineral and energy resources, livestock grazing, and land use plans as described for the All Wilderness Alternative. The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 20,725 acres of oil and gas leases in the area that would be designated wilderness. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas or the carbon dioxide resource is within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. It is not known how much carbon dioxide is within the ISA. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 2.8 million barrels of oil and 17 billion cubic feet of natural gas could be foregone. This would allow recovery of .2 million more barrels of oil and 1 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the

potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and natural gas resource. It is unknown how much carbon dioxide gas resource is found within the ISA.

Locatable Minerals

There are presently no mining claims within the ISA. If claims are located before wilderness designation, development work, extraction, and patenting could occur on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable 500 tons of uranium in the ISA are within the area that would be designated as wilderness under this alternative. Assuming that locatable minerals are evenly distributed in the ISA and that mineral deposits were not included in mining claims filed before designation, the potential for recovery of 460 tons of uranium would be foregone. This would allow for recovery of 40 more tons of uranium oxide than the All Wilderness Alternative.

Because uranium is not being recovered at present within the ISA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not prevent recovery of significant amounts of uranium resources.

LIVESTOCK

The effect of designation of 39,256 acres of the ISA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 884 AUMs allocated, 800 would be within the designated portion of the WSA and 84 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 800 AUMs in the designated portion could be restricted to preserve wilderness values. Because only 2 miles of fence have been proposed in the ISA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected. The 2 miles of proposed fence would be in the nondesignated area.

VISUAL RESOURCES

Because total surface disturbance in the ISA would be 33 acres under this alternative as opposed to 180 acres under No Action and 20 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and slightly more than under the All Wilderness Alternative. In the portion recommended for designation, 18 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 15 acres in the nondesignated portion of the ISA would be disturbed and would not meet VRM Class I objectives. Disturbance of a total of 33 acres within the ISA would result in localized long-term impairment of visual values but would not significantly affect visual resources in the ISA as a whole. However, if roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality in the ISA could be significantly reduced.

RECREATION

Impacts on recreational values and opportunities for the 39,256-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 9 miles of ways within the ISA would be closed to ORV use.

In the area that would not be designated (3,475 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 39,256 acres that would be designated wilderness. Size, naturalness (all 39,256 acres affected are natural), outstanding opportunities for solitude (36,000 acres that meet the standard and 3,256 acres that do not meet the standards) and primitive recreation (including 36,800 acres that meet and 2,456 acres that do not meet the standards), and special features would be preserved. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 18 acres. Additionally, sights, sounds, and emissions of activities within and adjacent to the 3,475-acre area that would not be designated could result in loss of solitude and primitive recreational values within the designated portion.

In the 3,475-acre area that would not be designated, there would be only 15 acres of disturbance from mineral and energy exploration and development activities. Those activities would degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation [both rated less than outstanding]) from the commencement of activities through rehabilitation. Thus, slight long-term impairment of wilderness values in the portion that would not be designated would be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

The portion that would be designated would be contiguous with the Forest Service wilderness area. It would complement their management.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative with the exception that this alternative would be consistent with the *Gar-*

field County Master Plan. The plan recommends the same 39,256 acres be designated by Congress for wilderness. The alternative would also be consistent with Forest Service management of the Box-Death Hollow Wilderness Area.

SOCIOECONOMICS

Partial designation of this ISA is not expected to result in any changes in existing patterns and trends of population, employment, and local income distributions. The 884 AUMs would remain available to cattle in the six allotments and would generate \$1,238 in grazing fees, \$17,680 in livestock sales, and \$1,238 in returns to ranchers' income. As compared to the No Action Alternative approximately \$20,775 per year in Federal oil and gas leasing revenue, \$10,425 less than with the All Wilderness Alternative, would be lost as leases were phased out. This revenue would not be transferred to State programs. Overall, the local economic impact from this alternative would be considered insignificant, as would economic impacts from the No Action and All Wilderness Alternatives.

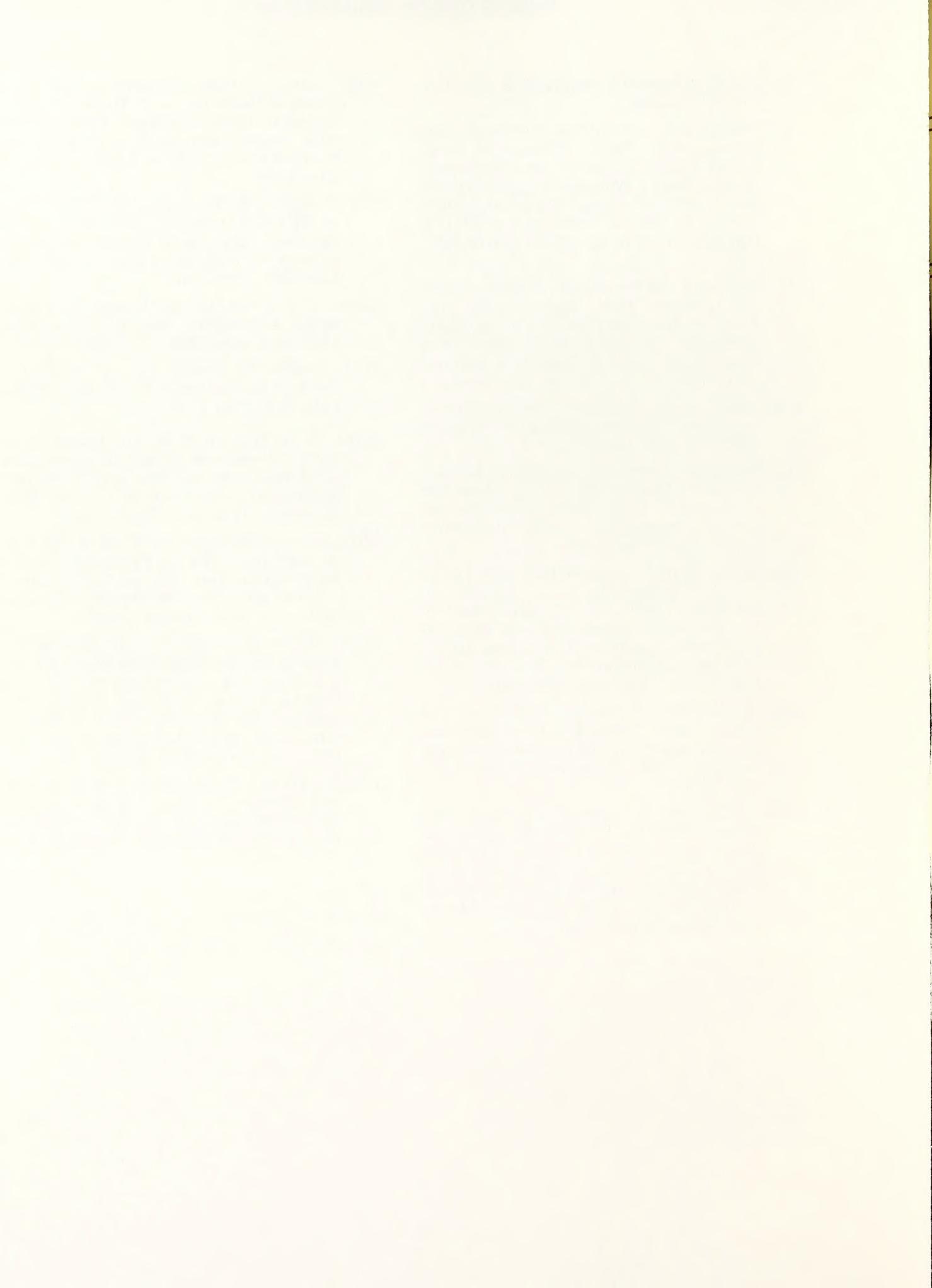
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Steep Creek WSA



STEEP CREEK WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	1
No Action Alternative	2
All Wilderness Alternative	2
Partial Wilderness Alternative (Proposed Action)	6
Summary of Environmental Consequences	9
AFFECTED ENVIRONMENT	9
Air Quality	9
Geology	9
Soils	9
Vegetation	12
Water Resources	12
Mineral and Energy Resources	12
Wildlife	15
Forest Resources	16
Livestock and Wild Horses/Burros	16
Visual Resources	16
Cultural Resources	16
Recreation	16
Wilderness Values	17
Land Use Plans and Controls	20
Socioeconomics	20
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	22
Analysis Assumptions and Guidelines for All Alternatives	22
No Action Alternative	22
All Wilderness Alternative	25
Partial Wilderness Alternative (Proposed Action)	28
BIBLIOGRAPHY	33

STEEP CREEK WSA (UT-040-061)

INTRODUCTION

General Description of the Area

The Steep Creek Wilderness Study Area (WSA) is located in Garfield County approximately 3 miles east of the Town of Boulder, Utah. The WSA borders the Dixie National Forest on the north and the Burr Trail Road on the south. The WSA contains 21,896 acres of full estate Federal land and encloses 1,907 acres of State land and 138 acres of split estate land (Federal surface, State minerals). It is administered by the BLM's Cedar City District, Escalante Resource Area Office.

The WSA is characterized by a series of long, deep canyons separated by benches. There are numerous winding canyon drainages with riparian vegetation and steep cliffs which isolate benchlands between canyons. The major vegetation type is pinyon-juniper.

In general, the climate is temperate and arid with annual precipitation averaging about 10 inches. From June through early September convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates occur primarily from November through March.

Summer temperatures in Escalante, Utah range approximately 30 degrees Fahrenheit (F) with highs in the mid-90s and lows in the mid-60s. Winters in Escalante have a temperature range of about 27 degrees F with highs in the low 40s and lows about 15 degrees F. Snowfall in Escalante averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified in Scoping

General issues pertaining to Steep Creek WSA are discussed in Volume I. Issues identified during the study phase include the following: (1) Uranium mineralization in the WSA, particularly in areas associated with the Shinarump Conglomerate Member of the Chinle Formation in the northeast portion of the WSA; (2) lands needed for future expansion of transportation and utility corridors along the Burr Trail Road (1,738 acres); and (3) maintenance of three existing rights-of-way and easements.

An issue raised during the spring of 1984 public scoping meeting (USDI, BLM, 1984) is responded to below.

1. *Comment:* The Environmental Impact Statement (EIS) should evaluate potential range improvements for elk along the north boundary area of this WSA.

Response: There are presently no plans to improve elk habitat within the WSA; however, the Utah Division of Wildlife Resources (UDWR) has identified a need for an elk habitat management plan for the area. Elk are occasionally wintering in fields near the Town of Boulder. There is a need and a potential for improving elk habitat by land treatments within the WSA to reduce elk use of private lands.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

No alternatives were identified for this WSA during scoping other than those analyzed.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (21,896 acres); and (3) Partial Wilderness (18,350 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.



STEEP CREEK WSA

NO ACTION ALTERNATIVE

Under this alternative, none of the 21,896-acre Steep Creek WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Escalante Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981a). Neither the 1,920 acres of State land or the 138 acres of split estate land within or adjacent to the WSA (refer to Map 1) has been identified for special Federal acquisition through exchange or purchase; therefore, the surface and/or minerals of these lands are analyzed as under State ownership. Adjacent private lands are expected to remain in private ownership.

The following are specific actions that would take place under this alternative:

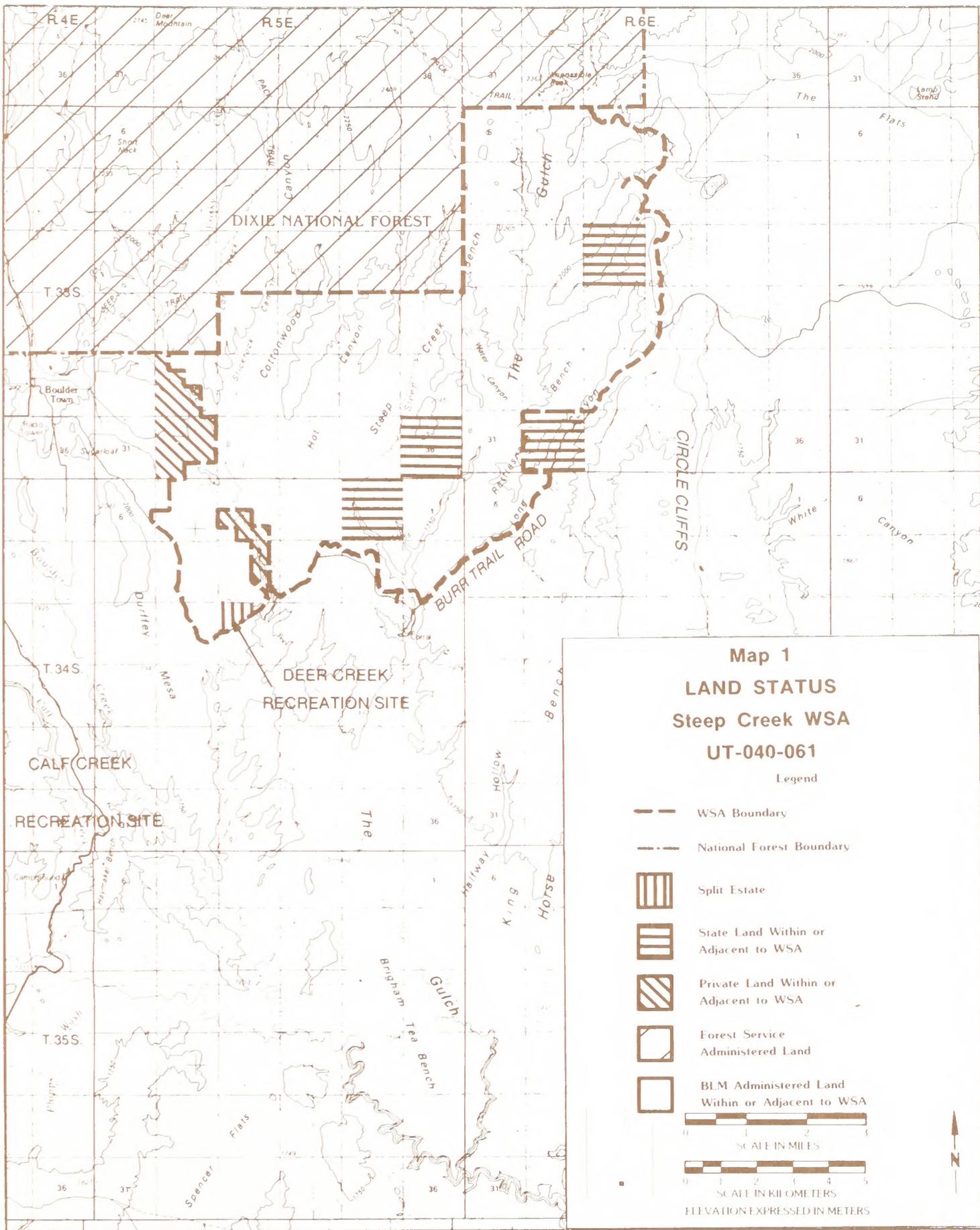
- All 21,896 acres would remain open to mineral location, leasing (with standard and special lease stipulations), and sale. Development work, extraction, and patenting would be allowed on 82 existing mining claims (about 1,280 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 Code of Federal Regulations [CFR] 3809). Existing oil and gas leases (16,075 acres) and future leases could be developed under leasing Category 1 (standard stipulations) on the entire 21,896 acres, and 2,601 acres of unleased land could be considered for leasing.
- The present domestic livestock grazing use of the 21,896-acre WSA would continue as authorized in the MFP (532 Animal Unit Months [AUMs]). The existing rangeland facilities (2.3 miles of fence, one developed spring, and 1.25 miles of stock trail) could be maintained in a routine manner, with motorized equipment if needed. Although none are now planned, new rangeland developments could be implemented without wilderness considerations. About 11 miles of boundary road, also known as the Burr Trail (or Boulder to Bullfrog Road), that have been proposed for realignment and paving, could be constructed without wilderness considerations.

- Developments for wildlife, watershed, water resources, etc. (none are currently planned) would be allowed without concern for wilderness values if in conformance with the MFP.
- About 18,676 acres, including about 1.50 miles of ways, would remain open for vehicular use. To protect riparian vegetation, 3,220 acres would remain closed to off-road vehicle (ORV) use. New access in or along the boundary of the WSA could be developed without wilderness considerations.
- The entire 21,896-acre area would continue to be potentially open to woodland product harvest. There is minimal harvest of forest products at the present time, and no increase is planned due to access and terrain limitations.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (21,186 acres) and Class IV (710 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

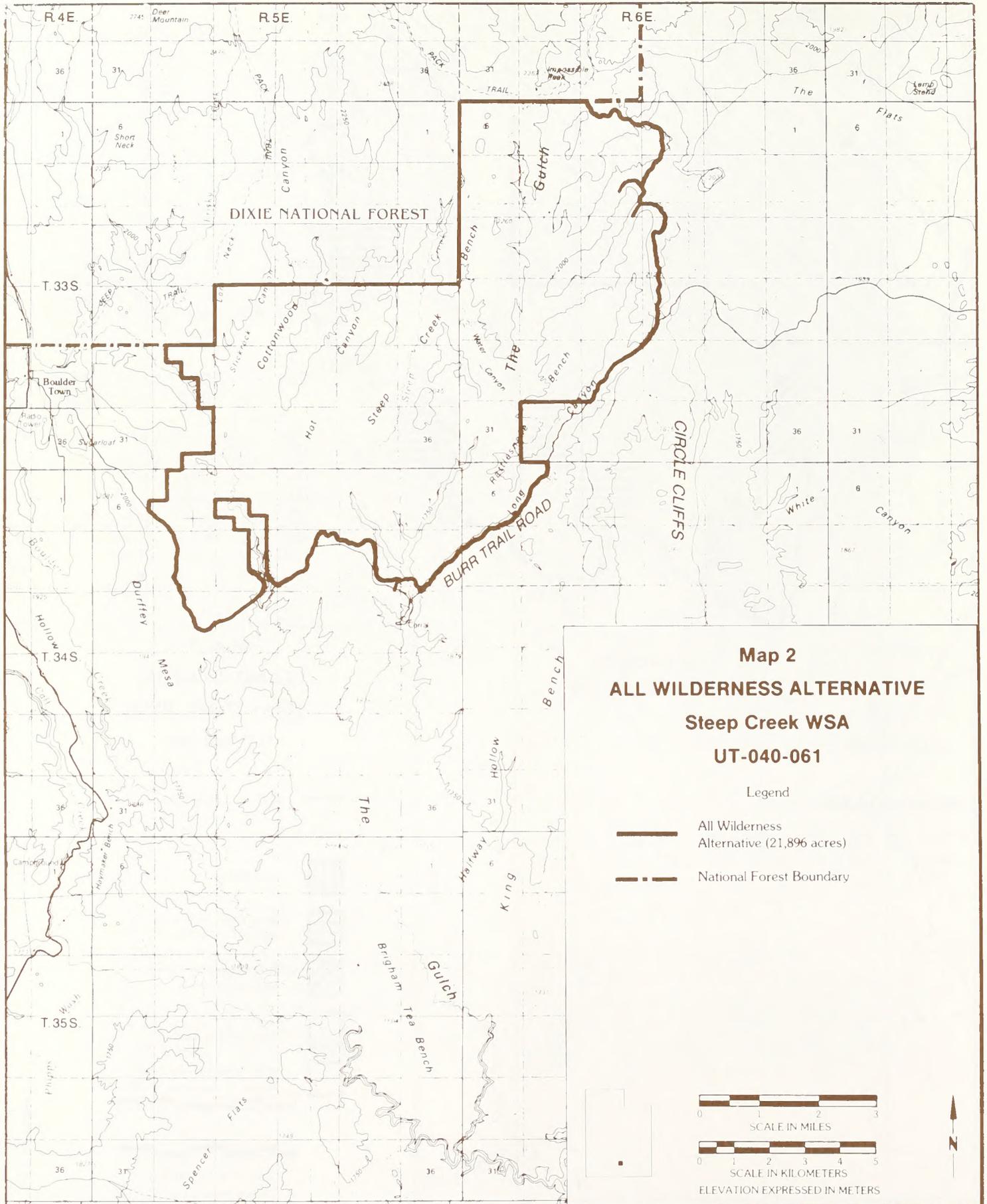
ALL WILDERNESS ALTERNATIVE

Under this alternative, all 21,896 acres of the Steep Creek WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM,

STEEP CREEK WSA



STEEP CREEK WSA



Map 2 ALL WILDERNESS ALTERNATIVE Steep Creek WSA UT-040-061

Legend

-  All Wilderness Alternative (21,896 acres)
-  National Forest Boundary


SCALE IN MILES


SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS

STEEP CREEK WSA

1981b) to preserve its wilderness character. Upon designation, Federal acquisition of three sections (1,907 acres) of State land and 138 acres of split estate land with State minerals within the WSA (refer to Map 1) is likely and would be authorized by purchase or exchange. (refer to Volume I for further information regarding State in-holdings.) One adjacent State section would be exchanged. Private lands in two locations adjacent to the WSA likely would not be acquired by purchase or exchange. The figures and acreages given under this alternative are for full estate Federal lands only. No private lands are located within the WSA, although one tract of private land is nearly surrounded by the WSA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 21,896 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 1,280 acres of 82 existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with concern for wilderness values. Existing oil and gas leases involving 16,075 acres would be phased out upon expiration unless an oil or gas find in commercial quantities is shown. New oil and gas leases, including three pending applications on 3,200 acres, would not be issued.
- Present domestic livestock grazing would be allowed to continue as authorized in the Escalante MFP. The 532 AUMs in the WSA would remain available to livestock as presently allotted. After designation, existing rangeland developments, as listed in the No Action Alternative, could be maintained in a manner least degrading to wilderness values. New rangeland developments (there are none proposed) would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that wilderness protection standards are met (refer to Appendix 1).
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance

wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are presently planned.

- Wildlife transplants and developments (none now exist or are proposed) would be allowed as long as criteria (refer to Appendix 1) are met to adequately protect wilderness values.
- The entire 21,896-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions. About 1.50 miles of existing vehicular ways would not be available for vehicular use except as indicated above. The .50-mile road in the northeast part of the WSA would be "cherry-stemmed" and would remain open to vehicular use. About 14 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel. About 11 miles of boundary road are known as the Burr Trail (or Boulder to Bullfrog Road) which has potential for realignment and paving.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 21,896-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed for roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface. Realignment of the Burr Trail Road beyond this 100-foot border would not be allowed, unless specifically approved by Congress.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources on 21,896 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

STEEP CREEK WSA

- Measures to control fire, insects, noxious weeds, or disease within the 21,896-acre area would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources in the 21,896-acre area would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE

(PROPOSED ACTION)

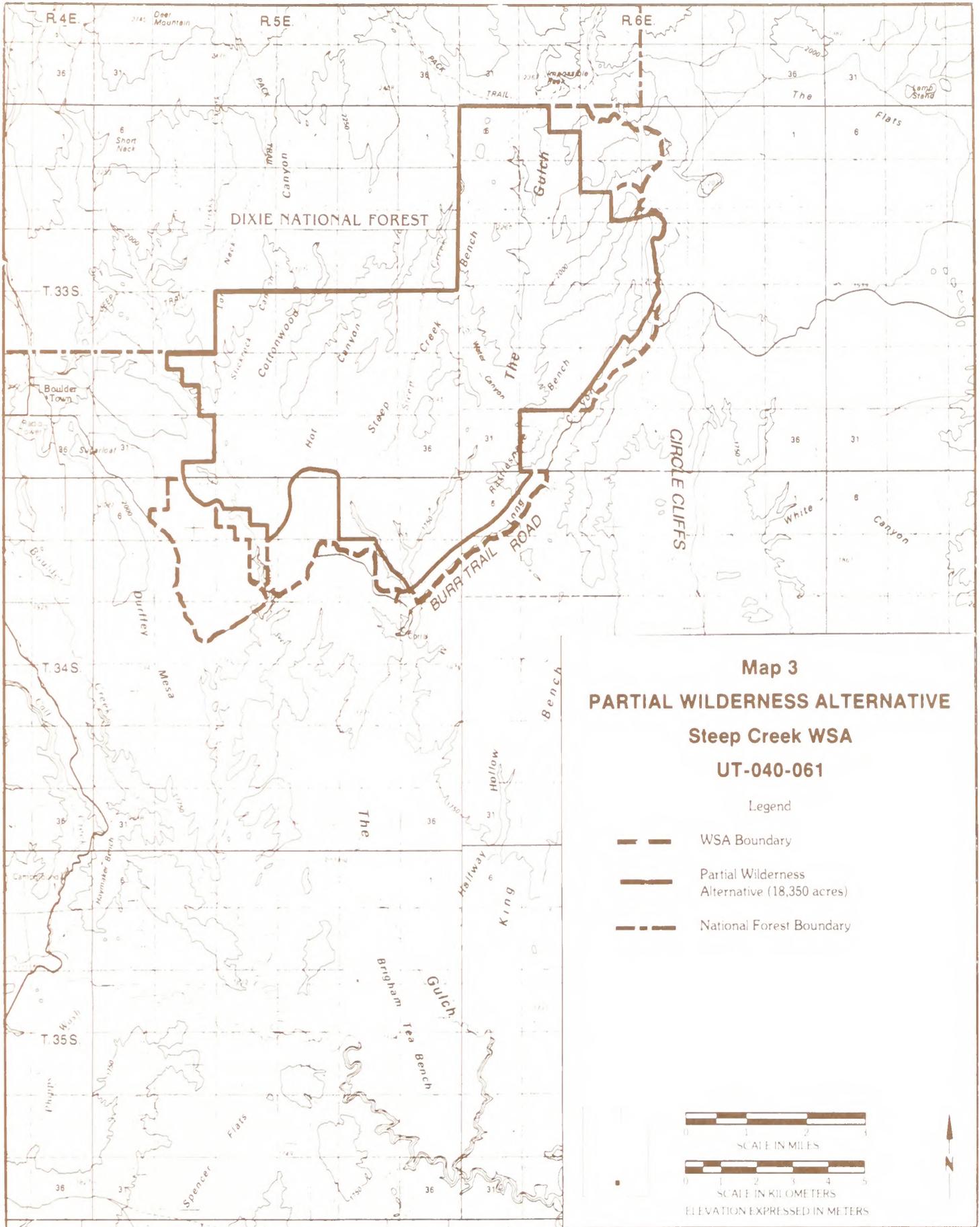
Under this alternative, 18,350 acres of the Steep Creek WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA with the most outstanding wilderness characteristics and to minimize conflicts with areas of greatest mineral development potential and the Burr Trail Road realignment in Long Canyon. Under this alternative, the acres analyzed as wilderness consist of the most rugged canyon portions of the

WSA including the upper section of The Gulch. The 3,546 acres along the northeast, east, and south edges within the WSA but outside of that designated as wilderness would be managed in accordance with the Escalante MFP as described for the No Action Alternative. The 18,350-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. Three State sections within the WSA and one adjacent State section likely would be exchanged under the Partial Wilderness Alternative. Assumptions regarding analysis and impacts for State lands involved in the partial alternative are the same as described for the All Wilderness Alternative (refer to Volume I). Private lands adjacent to the WSA likely would not be acquired by BLM. The figures and acreages under this alternative are for Federal lands only.

A summary of specific actions follows:

- The 18,350-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 18,350-acre area, development work, extraction, and patenting would be allowed to continue on any future claims located prior to wilderness designation, provided that they are valid. No claims now exist in the 18,350-acre area. The existing oil and gas leases, covering 13,060 acres in the 18,350-acre wilderness, would not be reissued upon expiration unless an oil and gas find in commercial quantities is shown. The 3,546-acre area within the WSA not designated wilderness would be open to future mineral location, leasing, and sale. The area not designated would be managed as oil and gas leasing Category 1 (standard stipulations). In the 3,546-acre area, mining would be allowed on 82 existing claims and future claims if valid. Development of such claims would be regulated by unnecessary or undue degradation criteria (43 CFR 3809) without wilderness considerations.
- Domestic livestock grazing would continue to occur in the 18,350-acre wilderness area. The 227 AUMs in the 18,350-acre area would remain available to livestock as presently allotted. New rangeland developments (none are currently planned) could be allowed in the wilderness if necessary for protection and management of the rangeland and/or wilderness resource, provided that wilderness

STEEP CREEK WSA



STEEP CREEK WSA

protection standards are met. In the 3,546-acre nonwilderness area, grazing use of 305 AUMs would occur and new rangeland developments (none currently planned) could be allowed in this area without concern for wilderness values.

- In the 18,350-acre wilderness, new water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed only if enhancing to wilderness, if necessary to correct conditions imminently hazardous to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act*. In the remaining 3,546-acre area, water resource facility developments would be allowed without concern for wilderness values if in accordance with the MFP. None are now proposed.
- In the 18,350-acre wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the remaining 3,546-acre area, wildlife transplants or improvements would be allowed without concern for wilderness values. None are now proposed in either part of the WSA.
- The canyons and benches that would comprise the 18,350-acre wilderness would be closed to ORV use. About 1.50 miles of existing ways in the bottom of The Gulch would not be available for vehicular use except in situations described under the All Wilderness Alternative. The 3,546-acre remainder of the unit would remain open to vehicular travel. The way "cherry-stemmed" in the All Wilderness Alternative would deadend at the boundary of the Partial Wilderness Alternative.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 18,350-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or deadend at the border of the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products in the 18,350-acre wilderness would not be allowed except for harvest of pinyon nuts or non-commercial gathering of dead-and-down wood if accomplished by other than mechanical means. The remaining 3,546 acres would be open to woodland harvest, although none is planned.
- Visual resources in the 18,350-acre wilderness would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The remaining 3,546 acres would be managed as Class II (2,836 acres) and Class IV (710 acres).
- Within the 18,350-acre wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques. In the 3,546-acre nonwilderness area, measures of control would be taken without wilderness considerations.
- In the 3,546-acre nonwilderness area, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the 18,350-acre wilderness, such activity would be allowed by permit provided it was accomplished in a manner compatible with wilderness preservation. Information gathering would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the 3,546-acre area, hunting would be allowed subject to applicable State and Federal laws and regulations. In the 18,350-acre wilderness, hunting would be allowed subject to applicable laws and regulations, but use would be limited to nonmotorized means.
- In the 3,546-acre area, control of predators would be allowed without wilderness considerations to protect threatened or

STEEP CREEK WSA

endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the 18,350-acre wilderness, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The Steep Creek WSA and surrounding area have a Class II Prevention of Significant Deterioration (PSD) classification under the Clean Air Act Amendments of 1977. Capitol Reef National Park (approximately 7 air miles east of the WSA) is the only Class I PSD area in the vicinity. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendation. Any further air quality reclassification is the prerogative of the State Government, not of the BLM (USDI, BLM, 1982b).

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit. Data collected from various sites such as Page, Arizona and Four Mile Bench, Garfield County, Utah indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

Geology

The Steep Creek WSA is within the Canyonlands section of the Colorado Plateau Physiographic Province. Elevation ranges from about 7,600 feet

on the tops of the benches in the northeastern-most part of the WSA to about 5,600 feet where Steep Creek joins The Gulch in the very southern-most part of the WSA. The WSA is characterized by a series of long, straight, steep canyons and flat-topped benches, all running in a north-south direction. Drainage in the WSA is in a southwesterly direction. Major drainages include The Gulch, Long, Steep Creek, and Hot, Cottonwood, and Slickrock Canyons.

Rocks of Jurassic and Triassic Age, totaling about 2,000 feet in thickness, and thin deposits of Quaternary Age outcrop occur in the WSA. Underlying Mesozoic and Paleozoic rocks in the region are more than 4,000 feet thick (Weir and Lane, 1981). The Triassic Chinle, Kayenta, and Wingate Formations form the most extensive outcrops in the eastern portion of the tract. The Triassic Moenkopi Formation forms the most extensive outcrop in the western portion of the WSA. At the extreme northeast end of the WSA, the axis of the Circle Cliffs anticline plunges northwest. Normal faults with small displacements are common within the eastern half of the WSA, and some can be traced along the surface for up to 6 miles.

Soils

The major part of the WSA is rockland. This land type consists of exposures of bare bedrock, mostly sandstone and limestone with gentle to steep slopes. The rockland area has very little vegetation with native vegetation growing only in crevices and pockets of soil material (Wilson, et al., 1975). The WSA is broken down into the erosion classes shown in Table 2. Erosion condition was determined by using soil surface factors. Most erosion problems are due to geologic erosion rather than man-caused.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	3,209	15	17,330
Critical	2.7	1,330	6	3,590
Moderate	1.3	0	0	0
Slight	0.6	0	0	0
Stable	0.3	17,357	79	5,210
Total		21,896	100	26,130

Sources: USDI, BLM, 1979a; Leifeste, 1978.

STEEP CREEK WSA

**TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
STEEP CREEK WSA**

Resource	Alternatives		
	No Action	All Wilderness (21,896 Acres)	Partial Wilderness Designation (18,350 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 6,934 tons of uranium oxide.	Oil and gas likely would not be recovered. Assuming a worst-case analysis, recovery of uranium could also be foregone. Due to the low likelihood of recovery with the No Action Alternative, this loss of development opportunity would not be significant.	Although likelihood is low, up to 0.5 million barrels of oil, 3 billion cubic feet of natural gas, and 1.178 tons of uranium oxide could be recovered.
Wildlife	About 1 percent of the WSA could be directly affected by mineral and energy development, which could adversely affect wildlife on the disturbed areas. Although not formally proposed, land treatments could be done in the northern end of the WSA to improve elk habitat and reduce elk grazing damage to private fields near Boulder.	Wildlife would benefit from solitude. Elk grazing damage to private fields would continue.	Wildlife in the designated area would benefit from solitude. About 2 percent of the nondesignated portion could be disturbed by mineral-related activity, which could adversely affect wildlife habitat. Elk grazing damage to private fields would continue.
Livestock	Grazing of 2,693 AUMs and maintenance of existing developments, which consist of one spring development, 2.3 miles of fence, and 1.25 miles of trails, would continue. New developments could be constructed; however, none are now proposed.	Grazing of 2,693 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. If proposed, certain new developments might not be allowed.	Effects on livestock management would be about the same as with the All Wilderness Alternative.
Visual Resources	The quality of visual resources could be impaired on up to 250 acres.	Visual quality could be impaired on up to 40 acres.	Visual quality could be impaired on up to 100 acres. All of the Class A scenery would be protected in the designated area.
Recreation	ORV use would continue on 1.5 miles of ways and 85 percent of the WSA at current low levels. Overall recreational use could increase from the present 10,050 visitor days per year to 14,975 over the next 20 years. Up to 250 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 1.5 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	Effects would be the same as with the All Wilderness Alternative.

STEEP CREEK WSA

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
STEEP CREEK WSA

Resource	Alternatives		
	No Action	All Wilderness (21,896 Acres)	Partial Wilderness Designation (18,350 Acres) (Proposed Action)
Wilderness Values	Wilderness values could be lost on up to 250 acres (1 percent of the WSA), but the values in the rest of the WSA would not be affected.	Wilderness values would be protected, except on up to 40 acres (less than 0.2 percent of the WSA), which could be disturbed by development of valid mineral rights.	Wilderness values would be protected, except on up to 30 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on 2 percent of the 3,546 acres not designated. Overall, wilderness values could be lost on less than 0.5 percent of the WSA. However, all of the area meeting the standards for outstanding opportunities for solitude, primitive recreation, and naturalness would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would not be consistent with the <i>Garfield County Master Plan</i> . It would be consistent with State of Utah plans and policies and the BLM Escalante MFP.	This alternative would not be consistent with the <i>Garfield County Master Plan</i> . It would be consistent with State policy if lands were exchanged. Designation would constitute an amendment of the BLM Escalante MFP.	Partial designation would be the same as the All Wilderness Alternative, except that it would be consistent with the <i>Garfield County Master Plan</i> .
Socio-economics	Annual local sales of less than \$103,060 and Federal revenues of up to \$52,445 would continue. An additional \$17,463 could be derived from leasing of presently unleased areas.	Annual local sales of less than \$103,060 and Federal revenues of up to \$4,220 would continue, but Federal revenues of up to \$65,688 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$55,050.

STEEP CREEK WSA

Vegetation

The existing major vegetation type in the WSA is pinyon-juniper (19,147 acres). The major species in this type include pinyon pine, juniper, sagebrush, Indian ricegrass, and sand dropseed occurring on the benches. Approximately 2,694 acres of the WSA are primarily slickrock and contain very little vegetation. Riparian vegetation (55 acres), which is considered to be vegetation associated with permanent waters, can be found along the following streams: The Gulch, Deer Creek, and Steep Creek (USDI, BLM 1980a). Major species include cottonwood, redbud, and carex. No threatened, endangered, or sensitive plant species are known to exist in the WSA.

The Steep Creek WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) type of the WSA is pinyon-juniper woodland. PNV is the vegetation type that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The Steep Creek WSA contains approximately 15 miles of perennial streams. These streams include Deer Creek, Steep Creek, and The Gulch (USDI, BLM 1979a). Flash floods are common on these streams from July to mid-September during the thunderstorm season. The most prevalent water quality problem results from suspended sediment which is a direct result of flooding. One developed and four undeveloped springs exist in the WSA. Primary uses are livestock and wildlife watering.

Water rights within the WSA's boundary total 33.77 acre-feet annually. This water is allocated to the BLM for livestock watering. The State of Utah has the water rights to 4.2 acre-feet of water from Steep Creek on a State section enclosed within the boundary of the WSA (Utah Division of Water Resources, 1969).

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI,

1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 2+ was assigned to the Steep Creek WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper that is currently listed as strategic and critical material (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand.

The energy and mineral resource rating summary is given in Table 3. SAI did not rate the potential copper resource.

LEASABLE MINERALS

Oil and Gas

The oil and gas capabilities of the region, including the Steep Creek WSA, have been reviewed by SAI (1982) and Doelling (1975). To date, however, there is no evidence indicating the existence of commercially recoverable oil and gas resources within this WSA. Eight exploratory oil and gas wells have been drilled at distances of 8 to 16

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil, less than 60 billion cubic feet of gas.
Uranium (66 percent of WSA)	f4	c4	Approximately 6,434 tons uranium oxide
Uranium (34 percent of WSA)	f2	c3	Less than 500 tons uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

miles away from the WSA. These wells tested part of each of the large anticlines that surround the WSA on its east, west, and north sites. Many of the wells bottomed in lower Paleozoic rocks and oil shows were reported from parts of the Pennsylvanian and Permian sections. Two of these wells tested the Circle Cliffs anticline 11 miles east of the WSA. This same anticline can be traced northward through the WSA. One of the wells was drilled in 1954 and bottomed in Cambrian rocks at a depth of 5,628 feet. According to SAI (1982), no oil shows were reported but Kunkel (1965) reports that oil shows were logged in the White Rim and Cedar Mesa Sandstones of Permian Age. The other well on the Circle Cliffs anticline was drilled in 1921 to the Redwall Limestone (Kunkel, 1965). Although the wells were positioned on the structurally highest part of the anticline and penetrated most of the Paleozoic section, it is impossible to say that this structure has been adequately tested. The 17-year history of oil exploration at the Upper Valley Field 30 miles to the west is a case in point. In addition to structural traps, the WSA may have some potential for stratigraphic and paleogeomorphic traps. However, available geologic and exploratory data do not support the belief that large traps of this type exist in southwestern Utah.

According to SAI (1982), the Steep Creek WSA is considered to have potential only for small, widely scattered oil and gas pools, similar perhaps to the Virgin Field in southwest Utah. This is largely due to the relatively thin stratigraphic sequence which generally limits the volume of

both favorable source and reservoir rocks and to the tendency for medium- or large-size accumulations to have been destroyed or reduced in size by recent tectonic events or water flushing. SAI (1982) estimates the size of recoverable hydrocarbon accumulations in such fields to be less than 10 million barrels of oil and no more than 60 billion cubic feet of gas. SAI (1982) has estimated that the recoverable undiscovered oil resources of the Western Rocky Mountain Region (Idaho, Nevada, Arizona, Utah, western Colorado, and western New Mexico) are between 2 and 8 billion barrels of oil. The speculative undiscovered petroleum resources in such a field may then represent between 0.1 and 0.5 percent of the potential of the region.

A significant carbon dioxide deposit was discovered in 1960 on the Escalante anticline about 10 miles northwest of the WSA. A carbon dioxide rich gas cap also exists above the oil in the Upper Valley Field. Although no other occurrences of carbon dioxide were reported in any of the aforementioned tests, the possibility of the occurrence of carbon dioxide along that portion of the Circle Cliffs anticline in the extreme northeastern portion of the WSA should not be discounted. Any estimates regarding the size of a carbon dioxide deposit would be purely speculative.

Under the current MFP all of the acreage within the unit is open to oil and gas leasing subject to the standard use and wilderness stipulations (Category 1). However, current Departmental policy is to not lease in WSAs or wilderness areas.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

STEEP CREEK WSA

Leases that are producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

At the present time there are 25 oil and gas leases covering 16,075 acres within the WSA. Pre-FLPMA leases include 4,310 acres and post-FLPMA leases include 11,765 acres. An additional 5,821 acres are presently unleased.

Coal

The WSA lies between the Henry Mountains Coal Field approximately 10 miles to the northeast and the Kaiparowits Plateau Field approximately 20 miles to the southwest. All coal-bearing rocks in these fields as well as all other fields in southern Utah are of Cretaceous Age. No other coal-bearing rocks with commercial potential are known to occur in southern Utah (Doelling and Graham, 1972). Since the WSA is underlain entirely by rocks of pre-Cretaceous Age, no potential for coal resources of commercial quantity exists in this area. Coal leasing is currently prohibited in the WSA.

Geothermal

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks occur within or near the WSA. The closest thermal spring is approximately 48 miles to the southwest in Red Canyon and it discharges at a temperature of only 20 degrees Centigrade (C) (SAI, 1982). Therefore, very little potential exists for geothermal resources within the WSA. Geothermal leasing is currently prohibited in the WSA.

LOCATABLE MINERALS

Uranium and Associated Minerals

Uranium in the Greater Circle Cliffs Resource Area is rated f4/c4, while the Chinle Formation Resource Area rating is f2/c3.

Rock units considered favorable for uranium in south-central Utah (U.S. DOE, 1979) are the Basal Members and the Petrified Forest Member of the Chinle Formation (Triassic) and the Salt Wash Member of the Morrison Formation (Jurassic). Although the Morrison Formation has been removed by erosion throughout the WSA, favora-

ble rock units in the Chinle Formation do crop out on the east side of the tract along the west limb of the Circle Cliffs uplift. On the west side of the WSA, the Chinle Formation is at a depth of approximately 1,700 feet (Hintze, 1973).

In the area adjacent to the northeast portion of the WSA, Hackman and Wyant (1973) report the occurrence of three uranium prospects of greater than 0.01 percent uranium oxide and one deposit that has produced less than 10 tons of uranium oxide. Numerous other prospects lie a short distance from the WSA. No uranium deposits are known to occur within the WSA. All the deposits and prospects in the immediate area are within the Shinarump Conglomerate Member of the Chinle Formation.

Bendix (1978) points out that Chinle Formation deposits found in the Henry and Carrizo Mountains tend to be small and highly localized. Small deposits of this type are economical to extract only when exposed in outcrops or when closely grouped (SAI, 1982). Undiscovered small deposits at depths exceeding 1,000 feet in the Chinle Formation significantly reduce the potential of the western side of the WSA for economic deposits of uranium. The Chinle Formation on the eastern side of the WSA, however, must be considered as having a higher economic favorability for uranium development than other areas within the WSA.

Probable resource areas are defined by the U.S. DOE (1983) as those areas where potential resources are estimated to occur in known productive uranium areas either in extensions of known deposits or in undiscovered deposits within geological trends or areas of mineralization. According to the U.S. DOE (1983), one area within the WSA has a 50-percent probability to contain a total of about 6,434 tons of uranium oxide at a minimum grade of .01 percent. This area of approximately 14,400 acres is within the 720,600-acre Greater Circle Cliff probable resource area.

Favorable areas are defined by the U.S. DOE (1983) as geographic areas in which the available data indicate the existence of geologic environments favorable for the concentration of uranium. No estimate has been made by the U.S. DOE of possible tonnages in favorable areas. However, an f2 rating by the U.S. DOE indicates that any potential deposit would not be expected to exceed 500 tons uranium oxide at a forward cost of \$100/pound. The remainder of the WSA or approximately 7,500 acres is within the Chinle Formation favorable area.

STEEP CREEK WSA

Based on the U.S. DOE's estimate of .01-percent minimum grade and 5-meter average thickness, the areal extent of each possible deposit in the Greater Circle Cliffs probable resource area is 1,200 acres. The possible deposits would occupy approximately 8 percent of the portion of the probable resource area in the WSA. The areal extent of a deposit in the Chinle Formation favorable area is estimated to be about 100 acres based on a .01-percent minimum grade and a 5-meter average thickness for base rock. The possible deposits would occupy approximately 1 percent of the favorable area in the WSA.

Any mining operations in the probable resource area or the favorable area would be by underground methods. Surface facilities required for underground mines usually consist of one or more portals and air vents and a leaching mill for ore concentration. Although it is difficult to project the extent of such a hypothetical operation, underground mines of these size deposits typically require less than 100 acres for surface facilities.

Developmental drilling, especially for detailed delineation of a deposit, could require significantly more surface area than actual mining operations. This would depend largely on the size and complexity of the potential deposit and how much drilling would be involved. A closely spaced drilling program could require anywhere from a few acres for a small deposit with a blanket-type configuration to much more acreage for larger deposits with more complex configurations.

A total of 82 mining claims are presently associated with the WSA. Since copper often is associated with uranium mineralization, these claims could also be for copper. All of these claims are located on outcrops of the Shinarump Member in the extreme eastern portion of the unit. BLM has not made a determination as to the validity of the claims. According to SAI (1982), the last year of mining activity in this area was 1962, and the most recent exploratory work was in 1977.

Copper associated with uranium mineralization occurs in the Shinarump Member of the Chinle Formation (Doelling, 1975) near the eastern boundary of the unit. According to Doelling (1975), the copper minerals most often associated with the uranium deposits (malachite, azurite, chalcopyrite, bornite, and chrysocolla) seem to be controlled by the same factors that have deposited the uranium minerals. In many cases the copper minerals are concentrated around distinct uranium deposits. Copper prospects within

the Chinle Formation in the vicinity of the eastern boundary of the unit have reported assays of 0.1 to 13.2 percent copper (Doelling, 1975). Since copper occurrence in the unit is intimately associated with uranium mineralization, the potential of the western side of the unit for economic deposits of copper is also low. However, for the same reason, the Chinle Formation on the eastern side of the WSA must be considered as having a relatively high potential for small economic copper deposits. It is possible that some or all of the 46 claims located entirely within the WSA and the 36 claims situated partially in the unit are located, at least in part, for copper.

Salable Minerals

Stream gravel and other loose rock material that could be used for construction occur within the tract. These deposits are not unique or economically significant due to the presence of ample similar materials nearby outside the WSA.

Wildlife

The Steep Creek WSA has habitat that could support approximately 50 species of mammals, 170 species of birds, 17 species of reptiles, five species of amphibians, and six species of fish. The birds are mainly seasonal residents or migrants while the other species are primarily residents. Major game species inhabiting the WSA are mule deer, elk, cougar, mourning dove, and various waterfowl.

The entire WSA provides yearlong, winter, and important winter range for mule deer; however, deer numbers are low. The important winter range supports a wintering deer population that spends the remainder of the year on the Dixie National Forest. The riparian areas are the most important use areas for the resident populations.

The WSA provides approximately 5,000 acres of important winter range for elk. UDWR transplanted 159 elk into the Boulder Mountain elk herd unit in 1976-77. During years of heavy snowfall on the higher elevations of the Dixie National Forest, between 50 to 80 elk may migrate onto winter range which includes part of the WSA. Elk, during hard winters, are also using forage from private fields near Boulder. UDWR has identified a need for an elk habitat management plan that would help reduce the elk use of private lands. Portions of Steep Creek WSA have potential for land treatments to improve elk habitat. However, there are presently no plans to do this. Two endangered species, the peregrine falcon (*Falco*

STEEP CREEK WSA

peregrinus) and bald eagle (*Haliaeetus leucocephalus*), are rare migrants and possibly winter visitors of the WSA. No other threatened, endangered, or Federally sensitive species are known to occur in the WSA.

At least seven other raptors are known to nest in the WSA, including the golden eagle, but only the American kestrel could be considered common. The UDWR (1982) list of sensitive species includes three species that occasionally occur within the WSA: Lewis woodpecker and western and mountain bluebirds.

The most important game fish occurring in the WSA are brown and rainbow trout. Deer Creek is the only stream in the WSA that supports trout populations. Rainbow and brown trout are not native to this area but have been introduced at various times by UDWR; however, they do not stock these waters on a regular basis (USDI, BLM, 1979a).

No critical habitat has been identified in the WSA. No wildlife habitat plans or wildlife projects have been developed within the WSA.

Forest Resources

No significant forest resources occur in the WSA. The WSA does contain stands of pinyon pine and juniper (approximately 19,147 acres) that are open for the collection of fuelwood; however, due to the remoteness of the area, access, and sparse vegetation, current use is minimal (USDI, BLM 1979a).

Livestock and Wild Horses/Burros

The WSA encompasses one livestock (cattle) grazing allotment (White Rock) and portions of three others (Deer Creek, Circle Cliffs, and Steep Creek). Tables 4 and 5 summarize livestock use and existing and proposed range improvements in the WSA. There are no wild horses or burros in the WSA.

Visual Resources

The BLM visual resource inventory classified approximately 19,100 acres as Class A and 2,800 acres as Class B scenery. VRM classes assigned include 21,186 acres of the WSA in Class II and 710 acres in Class IV (refer to Appendix 7 for more detail on BLM's VRM system). The landscapes of the WSA are derivative of both the Escalante River canyon country and the Circle Cliffs. The WSA is

TABLE 4
Livestock Grazing Use Data

Allotment	Total Acres	Acres in WSA	Suitable Acres in WSA	Unsuitable Acres in WSA	AUM Grazing Preference in WSA	Livestock Permits Using WSA
White Rock	1,382	1,286	644	642	56	1
Deer Creek	18,322	4,201	3,085	1,116	660	2
Steep Creek	12,141	8,696	2,268	6,428	447	1
Circle Cliffs	30,774	3,591	619	2,972	1,530	3
Unallotted	4,122	—	4,122	—		
TOTAL	62,619	21,846	6,616	15,280	2,693	7

Source: USDI, BLM, 1979a.

TABLE 5
Existing and Proposed Range Improvements

Allotment	Existing Improvement	Proposed Improvement
White Rock	0.5-mile fence	None
Deer Creek	None	None
Steep Creek	1 spring development 1.8 miles fence 1.25 miles stock trail	None
Circle Cliffs	None	None

Source: USDI, BLM, 1979a.

also on the shoulder of the Aquarius Plateau and exhibits some mountainous features. Scenic values are discussed in detail under Wilderness Values, Special Features section.

Cultural Resources

Based on archaeological surveys (USDI, BLM, 1979b) approximately 11,000 acres in the WSA contain medium site densities (11 to 49 sites per 23,000 acres). Site densities on approximately 11,000 acres are unknown. No National Register sites exist in the WSA.

Recreation

Although the Steep Creek WSA offers opportunities for both primitive and nonprimitive types of recreational use, reliable data on existing visitor use are not available. Most of the present use of the WSA is probably associated with primitive

STEEP CREEK WSA

opportunities such as hiking, backpacking, horse-back riding, photography, sightseeing, and rock-hounding. It is estimated that the area receives 10,050 primitive visitor days annually. Approximately 50 visitor days are for activities where vehicles are used. Although no developed hiking trails exist in the WSA, at least 15 miles of hiking routes are available. Trailheads for hiking exist at the adjacent Deer Creek Recreation Area and on the Long Canyon-Burr Trail Road crossing of The Gulch. The primary use period is from March to November.

The area is utilized by commercial outdoor survival groups as an outdoor classroom.

The Gulch and Egg Canyon have been identified as petrified wood areas. Collecting opportunities occur in the Morrison and Chinle Formations. The Egg Canyon Petrified Wood Area contains significant quantities of petrified wood in the form of large logs. Deer Creek offers sport-fishing opportunities for brown and rainbow trout. Deer Creek is stocked with rainbow trout on the Dixie National Forest. Fishing use is minor.

Approximately 18,676 acres of the WSA are open and 3,220 acres are closed to ORV use. The closed areas include Cottonwood Wash (670 acres), Hot Canyon (770 acres), Steep Creek (640 acres), and The Gulch (1,140 acres). ORV use is limited to designated roads and trails in the Egg Canyon Petrified Wood Area.

Since most of the major access areas are closed to vehicles, visitor use associated with ORVs is very low and is estimated at 50 visitor days annually.

Wilderness Values

SIZE

The size of the WSA is 21,896 acres. It is approximately 9 miles long (north to south) and 8 miles wide (east to west).

NATURALNESS

Naturalness is defined as an area where the evidences of man are substantially unnoticeable to the average visitor and where individual minor imprints of man exhibit no cumulative impact that is substantially noticeable. Imprints of man that remain in the WSA include a way in the bottom of The Gulch, 2.3 miles of fence, and three existing rights-of-way. These imprints combined involve 20 acres of the WSA.

In the Steep Creek WSA, the high quality of naturalness has not changed since the *BLM Intensive*

Wilderness Inventory (USDI, BLM, 1980b) decision. No additional imprints have occurred in the WSA as a result of impairing uses or activities allowed under the BLM's *Interim Management Policy* (USDI, BLM, 1979c).

SOLITUDE

The outstanding opportunity for solitude (15,500 acres) in the Steep Creek WSA is derivative of both topographic and vegetative screening.

The size of this WSA is neither considered to enhance nor detract from the outstanding opportunities for solitude present in the WSA. The configuration neither enhances nor detracts from the outstanding opportunities present.

The WSA is characterized by a series of parallel canyons and intervening benches or ridges extending in a north-south direction. The streams drain southerly from the Aquarius Plateau to the Escalante River south of the WSA. In portions of the WSA, the canyons are abruptly entrenched in Wingate Sandstone creating distinct and isolated intervening benches. In other portions of the WSA, the canyons extend to the divides between streams. In the eastern portion of the WSA, canyons have cut through the Circle Cliffs escarpment. In these situations, the Circle Cliffs and canyons together form the walls of the benches. Although some of the streams are ephemeral, in most instances the canyon bottoms are characterized by riparian growth. Deer Creek, Steep Creek, and The Gulch-Water Canyon possess perennial streams. Slickrock Canyon, Cottonwood Canyon, Hot Canyon, upper reaches of The Gulch (including Egg Canyon) and Long Canyon are ephemeral.

Because of these topographic and vegetative influences, natural screening enables the visitor to find secluded spots throughout the WSA. The entire WSA can be considered to exhibit opportunities for solitude. The opportunities for solitude in the canyons were inventoried as outstanding. The deep, winding canyons with riparian vegetation are considered the factors contributing to these outstanding opportunities.

The true benches in the WSA, such as Rattlesnake Bench and East Steep Creek Bench, also offer opportunities for solitude because they are isolated geographically by the steep canyon cliffs. The quality of the opportunity for solitude on these benches is dependent upon the degree of geographic isolation offered by the surrounding canyon walls and the internal topographic dissection of the benches.

STEEP CREEK WSA

The western portion of the WSA is characterized by a series of canyons with divides of Navajo Sandstone peaks, domes, and ridges. The canyons include Deer Creek, Slickrock Canyon, Cottonwood Canyon, and Hot Canyon. The canyons are entrenched and winding. They exhibit a dense growth of riparian vegetation. In most instances, both canyon and intervening ridge or upper canyon walls are Navajo Sandstone and the entire area exhibits alcoves, narrow side canyons, and the other excellent topographic screening features representative of the Navajo Sandstone. Outstanding opportunities for solitude are present throughout this area.

In the lower Hot Canyon drainage, the Navajo Sandstone disappears and Hot Canyon loses its entrenchment. The landscape is relatively undifferentiated with little relief, a moderate pinyon-juniper overstory, and sandy soils. The opportunity for solitude is lacking in this area. In the extreme southwestern portion of the WSA, an almost detached area exhibits a 500-foot slickrock mesa surrounded by an open flat. This area also lacks the outstanding opportunity for solitude.

The sights and sounds of human activities are not present from places within the WSA. It would be easy for a visitor to find seclusion in the deeper vegetated canyons and on the more isolated benches of the WSA. In summary, it is felt that approximately 15,500 acres or 71 percent of the WSA present outstanding opportunities for solitude. The remaining 6,396 acres or 29 percent do not meet this criterion.

PRIMITIVE AND UNCONFINED RECREATION

Outstanding opportunities for primitive recreation (18,100 acres) are present within the WSA because the backpacking, hiking, horseback riding, photography, sightseeing, and rockhounding types of primitive recreation are each considered to be of outstanding quality. Backpacking, hiking, and horseback riding are of exceptional quality in this WSA. The following factors contribute to this quality. Each of the major canyons in the WSA intersects the Long Canyon-Burr Trail Road, thus each canyon can provide dayhiking and riding opportunities. Backpacking is also enhanced by the road's presence because overnight loop trips in different canyons and benches can be conducted from the same staging area along the road. The Gulch is an exception because access to its benches is very difficult.

Although BLM policy does not consider the availability of water to be a constraint upon this wil-

derness characteristic, water sources are undeniably a convenience to the backpacker on extended trips. In the case of extended horseback trips, the availability of water would dictate whether this activity could occur at all. Because of the ready availability of water in the Steep Creek WSA, the backpacking opportunity is enhanced and horse packing becomes a reality. In this WSA the limiting factor to horseback activities is non-negotiable terrain rather than water. Most of the WSA other than several benches east of The Gulch is accessible to horses.

All of the canyons and much of the bench areas in the WSA are of high scenic quality. There are few areas within the WSA where foot or horse travel would occur in surroundings of little scenic merit. The high quality scenery contributes to the capability of the WSA to serve as a destination rather than a route for backpacking, hiking, and riding. The portion of The Gulch Canyon within the WSA is presently one of the important backpacking destinations on the Escalante River drainage, and it is hypothesized that the impressive scenery of this section of The Gulch is responsible for its destination type of use. Because the WSA possesses seven individual canyons, there are many different trip or route options available to the hiker or rider. This repetitive canyon-and-bench configuration increases both the visitor capacity and diversity of foot and horseback experiences within the WSA.

It is from this combination of factors present in much of the WSA that the hiking, backpacking, and horseback riding opportunities derive their outstanding quality. Approximately 18,100 acres are considered to possess outstanding foot or horseback opportunities. Certain areas do not exhibit these qualities. The lower Hot Canyon drainage, portions of the west Steep Creek Bench, and most of Long Canyon lack these outstanding activity opportunities.

The photography and sightseeing activities are directly related to the scenic amenities of the WSA. In general, the WSA is of uniformly high scenic quality, and the same areas supportive of the hiking, backpacking, and horseback opportunities also contribute to photography and sightseeing opportunities. The Gulch, Water Canyon, Egg Canyon, Upper Long Canyon and the Circle Cliffs, Lamanite Natural Bridge and its canyon, the upper Steep Creek-The Gulch divide, and the Slickrock Canyon-Cottonwood Canyon-Upper Hot Canyon areas all represent very high quality photography and sightseeing objectives.

STEEP CREEK WSA

The rockhounding opportunity for the well-known Circle Cliffs petrified wood is limited to the northeastern portion of the WSA where the Chinle Formation is exposed. Approximately 2,300 acres exhibit the exposed Chinle stratum.

It is felt that the primitive recreation opportunities on 18,100 acres or 83 percent of the WSA are outstanding and the remaining 3,796 acres or 17 percent do not meet the standard.

SPECIAL FEATURES

The Steep Creek WSA exhibits important scenic values contributed by the geological features of the WSA. Although some of the Steep Creek WSA exhibits a relatively undifferentiated landscape, a large portion possesses landscapes distinctive to the degree that they are easily recognized and can be typed.

Five landscapes can be distinguished within the WSA. Several of these landscapes are of extraordinarily high scenic value. The landscape types are identified as the Circle Cliffs, The Gulch Canyon-Rattlesnake Bench, Steep Creek-Steep Creek Bench, and the Deer Creek drainage.

The Circle Cliffs landscape type is found in the northeastern portion of the WSA. This is the best known and recognized landscape in the WSA. Within the WSA, the upper end of The Gulch, Egg Canyon, the unnamed canyon south of Egg Canyon, and the upper end of Long Canyon exhibit the attributes typical of this landscape. The landscape type also extends south along the western Circle Cliffs escarpment to Big Bown Bench and is not unique to the WSA. Characteristic features include the intensively colored red, orange, and purple Chinle mounds and ledges at the base of Wingate Sandstone cliffs; vertically jointed cliffs banded with red, yellow, and white colors; and bench tops and upper cliff faces possessing innumerable orange-red Kayenta Sandstone knobs. This is one of the most spectacular and distinctive landscapes on the Colorado Plateau.

The section of The Gulch in the WSA represents a marked visual departure from The Gulch downstream in The Gulch Outstanding Natural Area. In the WSA, The Gulch is deeply entrenched in very sheer red Wingate Sandstone walls. The canyon does not meander and the straight-line visual effect is broken only by entering the tributary canyons. The lower two-thirds of the Long Canyon tributary also possess these attributes.

The adjacent benches, particularly Rattlesnake Bench, are also distinctive because they are shaped by these canyons. They are thus a function of the canyons and integral to this landscape. The landscape type embraces both canyon and bench and much of it is of high esthetic value.

The drainage divide between the upper ends of Steep Creek and The Gulch is characterized by a series of high ridges and slickrock peaks. The ridges drop fairly abruptly to the canyons below. The peaks resemble the adjacent Impossible Peak area on the Dixie National Forest. The slickrock domes on the Steep Creek side of the divide are alcoved and heavily forested. The Gulch side of the divide is cut deeply by the unnamed canyon containing Lamanite Natural Bridge. These elements combine to create an overall landscape with important scenic values.

Much of the Steep Creek-Steep Creek Bench area constitutes a distinct landscape type within the WSA. This area is characterized by a straight and shallow Steep Creek Canyon and the relatively flat unbroken benches covered with pinyon and juniper on either side of Steep Creek. This landscape is lacking in colorful rock formations and offers little of scenic value.

The remaining landscape type is the slickrock and canyons complex in the western portion of the WSA. Canyons tributary to Deer Creek, including terraces, are characteristic of the predominantly white Navajo Sandstone. Distinct benches between the streams are absent. The concentration of canyons, the slickrock formations, and the high percentage of exposed rock are the esthetic elements contributing to a valuable scenic resource in this section of the WSA.

In addition to the Steep Creek-Steep Creek Bench area, there are other areas within the WSA that lack scenic values. These are areas of the WSA that exhibit no distinctive or peculiar landscape types. The lower Hot Canyon drainage is an example.

The Steep Creek WSA contains several site-specific features of scenic value. Lamanite Natural Bridge is actually a large arch with good symmetry and form. It is located in an impressive setting in a deep side canyon to The Gulch. The upper Gulch-Circle Cliffs area contains large, unbroken logs of petrified wood. The scenic value of these logs is enhanced by their colorful surroundings. In total, approximately 15,000 acres of the WSA possess scenic values.

Land Use Plans and Controls

The WSA contains 21,896 acres of public land administered by the BLM. Public lands in the WSA lie within the BLM Escalante Planning Unit and are being managed according to the land use decisions of the Escalante MFP (USDI, BLM, 1981a). Principle uses include recreation and grazing.

Three rights-of-way exist in the WSA: (1) Garkane Power Company's powerline easement (U27727); (2) Wilderness Survival Inc.'s right-of-way for an irrigation ditch (U29688); and (3) a telephone line (U30747). These rights-of-way are associated with Deer Creek Ranch which is private land adjacent to the WSA boundary.

The WSA encloses 1,907 acres of State land and 138 acres of Federal surface and State minerals (split estate). The split estate lands were added as a result of a recent United States District Court decision (Sierra Club et al vs. Watt, 4-19-85). State lands are managed by the State Land Board for the purpose of generating revenues for the State public school system. There are no private lands or subsurface rights within the WSA.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) recognizes the need for protection of specific areas. Within the county they propose 142,653 acres be designated wilderness by Congress. A portion of the Steep Creek WSA (18,350 acres) is included in the recommended acreage. The Master Plan recommends that the remainder of the WSA be managed for multiple use, including uses such as forestry, livestock grazing, mining, wildlife, and recreation.

The County also has plans to improve the Boulder to Bullfrog Road by paving to make it an all-weather road. The road would be designed primarily for tourism and recreational use.

SOCIOECONOMICS

The Steep Creek WSA is located in Garfield County and is approximately 3 and 30 road miles from the respective communities of Boulder and Escalante. Most of the economic impacts are expected to be restricted to this county.

DEMOGRAPHICS

Garfield County has an average population density of less than one person per square mile. This density is very low when compared to the state-wide average of 17 persons per square mile (U.S.

Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in Garfield County (3,673 persons) is concentrated in small communities rather than evenly distributed throughout the area.

EMPLOYMENT

The economy of Garfield County is dominated by the government sector and having strong service sectors in terms of employment (USDC, Bureau of Economic Analysis, 1982). The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (18 percent), and services (13 percent). Table 6 presents employment and personal income for Garfield County.

TABLE 6
1980 Employment and Personal Income
Garfield County, Utah

	Employment	Personal Income (\$1,100)
Total	2,143	24,792
Proprietors	349	2,637
Farm Proprietors	209	807
Nonfarm Proprietors	140	1,830
By Industry Source	—	—
Farm	27	949
Nonfarm	1,767	23,843
Private	1,332	19,049
Ag. Serv., For., Fish., and Other	(L)	79
Mining	208	4,222
Construction	379	5,536
Manufacturing	247	3,294
Nondurable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	84	84
Wholesale Trade	(L)	96
Retail Trade	126	1,302
Finance, Insurance, and Real Estate	16	189
Services	270	2,786
Government and Government Enterprises	435	4,794
Federal, Civilian	140	1,656
Federal, Military	24	64
State and Local	271	3,074

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

Possible impacts from wilderness designation are expected to be more obvious at the community level than the county level. Therefore, a description of the economies of communities in the region is necessary. It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the nongovernment employment and income in the area are based in the agriculture and services

STEEP CREEK WSA

sectors. This is based upon the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante, one community for which there are data. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

The community of Escalante lies along a major access route to the Steep Creek WSA, Utah Highway 12. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is expected to receive the greatest share of any socioeconomic impacts resulting from designation of the WSA as a wilderness area.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 7 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

The WSA has 82 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy.

No oil and gas or mineral has been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Seven livestock operators have a total grazing privilege of 532 AUMs within the WSA. If all this forage were utilized, it would account for \$10,640 of livestock sales and \$2,660 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use is moderate. Related local expenditures are low and could only be significant to the commercial outfitters who currently use the WSA. These expenditures are insignificant to both the local economy and individual businesses other than the commercial outfitters who use the WSA, because most purchases are made outside of the county and the City of Escalante. Related local expenditures are low. They are insignificant to both the local economy and individual businesses other than to commercial outfitters. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Steep Creek WSA is estimated as about 10,000 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Garfield County.

The WSA generates Federal revenues from mineral leases, livestock, and recreation sources (refer to Table 7).

Oil and gas leases in the WSA cover approximately 16,075 acres. At up to \$3 an acre, lease rental fees generate up to \$48,225 of Federal revenues annually. Half of these monies are allocated to the State which, in turn, reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

The livestock permittees in the WSA can use up to 532 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$745 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements. Recreation permits generate about \$450 of Federal revenues annually.

TABLE 7
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	48,225
Mineral Production	0	0
Livestock Grazing	53,860	3,770
Woodland Products	0	0
Recreational Use	41,000	450 ²
Total	94,860	52,445

Sources: USDI, BLM, 1979a; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

²Part of a total of \$1,350 revenues received from commercial organizations who also use the North Escalante Canyons/The Gulch and Phipps-Death Hollow Instant Study Areas.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this individual analysis.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without control for wilderness protection. The

degree of future development is unknown but would probably be low, due to the WSA's rough terrain and low resource potential. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: oil and gas, 160 acres; and uranium, 40 acres. (Appendix 10 lists surface disturbance assumptions and estimates.) In addition, up to 50 acres could be disturbed due to realignment and paving of the Burr Trail Road.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If minerals are developed, air quality could be reduced up to the PSD Class II limitations. Disturbance of 250 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because surface disturbance associated with locatable mineral and oil and gas exploration and development activities and road realignment would probably not exceed 250 acres. This would not significantly affect geology.

SOILS

It is estimated that up to 250 acres of soil could be disturbed by mineral exploration and development activities and road realignment. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 250 acres would increase from 675 cubic yards/year to 1,350 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 675 cubic yards (2.5 percent) over current annual soil loss. This is a small amount of soil loss and the effects would likely be imperceptible.

VEGETATION

The anticipated maximum of 250 acres disturbed would not significantly impact the WSA's sparse vegetation.

WATER RESOURCES

Since precipitation is low and the amount of disturbance is low, no significant sedimentation or change in total dissolved solids (TDS) is expected

STEEP CREEK WSA

to occur from the 675 cubic yards of annual soil loss. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Escalante Planning Unit.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits no development is expected under this alternative.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposit of up to 6,434 tons of recoverable uranium oxide in 66 percent of the area and up to 500 tons of uranium oxide on 34 percent of the area could be developed. Approximately 40 acres could be disturbed due to exploration and development of this locatable mineral resource. However, the likelihood of development is thought to be low in the near future because of economic considerations (e. g., transportation, low market, etc.).

WILDLIFE

Under this alternative wildlife, particularly elk, could be affected by a change in habitat. The WSA has potential for land treatments in the northern part and there is a need to develop additional elk winter habitat. However, there are no formal plans for doing so at the present time. Disturbance of an estimated 250 acres (1 percent of the WSA) through road realignment and mineral and energy exploration and development would disrupt wildlife. Deer and elk and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels.

FOREST RESOURCES

Since there are few accessible trees, none of which are utilized (except by occasional campers or hikers), and since minimal surface-disturbing activities are anticipated, no significant impacts to forest resources are expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante MFP and *Kanab-Escalante Grazing Management EIS* (USDI, BLM, 1980a). The 532 AUMs currently allocated in the WSA are controlled by seven livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA, few, if any, changes in livestock management techniques are expected.

VISUAL RESOURCES

Under this alternative, visual quality in the WSA would be protected by limitations placed on potential surface-disturbing activities (i.e. 3,220 acres would remain closed to ORV use and 21,186 acres would be managed under VRM Class II objectives requiring that activities not be apparent).

However, under this alternative, 250 acres of road realignment and mineral-related exploration and development is possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in VRM Class II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

The cultural resources in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 250 acres by road realignment and mineral exploration and development under this alternative could affect archaeological sites. Based on existing inventories, one to five sites could be impacted. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface

STEEP CREEK WSA

disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative road realignment and mineral-related exploration and development are possible on 250 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation.

One and one-half miles of way would be left open to ORV use, although they are only occasionally used for ORV travel.

The future increase in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 10,050 current visitor days per year to 14,975 visitor days at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 1,000 visitor days per year to about 1,490 visitor days per year over the next 20 years. Likewise, ORV recreational activities utilizing vehicular access (hunting, sightseeing, etc.) would increase from 50 visitor days per year to 75 visitor days.

If the Burr Trail Road were realigned and paved, the increase could be higher than projected.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante MFP. Under this alternative, wilderness values in the WSA would receive some protection by limitations placed on potential surface-disturbing activities (i.e., 3,220 acres would

remain closed to ORV use and 21,186 acres would be managed under VRM Class II objectives requiring that activities not be apparent).

However, under this alternative 250 acres of road realignment and mineral exploration and development are possible. The related surface disturbance would result in a significant loss of naturalness, solitude, and outstanding opportunities for primitive, unconfined recreation throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for coal development and related disturbance is high in this WSA in the long term.

LAND USE PLANS AND CONTROLS

This alternative would not be consistent with the *Garfield County Master Plan* which recommends 18,350 acres of the Steep Creek WSA be designated wilderness. It would, however, be consistent with plans to upgrade the Boulder to Bullfrog Road. This No Action Alternative is based on implementation of the current BLM Escalante MFP and is, therefore, in conformance with it. This alternative would be consistent with State of Utah plans and policies which emphasize economic return.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the uranium and oil and gas in the WSA were developed, it could lead to increases in employment and income for Garfield County. However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (532 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$10,640 annually in livestock sales and \$2,660 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated

recreational use in the area is estimated to increase 5,000 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Surface-impacting activities that would be allowed without designation could reduce the demand for commercial outfitter services now offered in the area. Decreased demand could be significant to the commercial outfitters who use the WSA but would be insignificant in terms of the local economy and other individual businesses.

Federal and State revenues would not be reduced by this alternative. There are 5,821 acres in the WSA open to lease that are currently not leased. If leased, they would bring up to \$17,463 additional Federal lease fee revenues per year in addition to potential royalties from lease production. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$745 per year) would continue. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (21,896 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 21,896-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 1.50 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

In the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA. The Burr Trail Road would not be realigned and paved.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (40 vs. 250 acres), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant as described for the No Action Alternative. Wilderness designation would provide additional protection for these resources.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Approximately 16,075 acres are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA. Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas with 3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Locatable Minerals

Approximately 1,280 acres are under mining claim within the WSA, principally for uranium. Up to 6,434 tons of uranium oxide on 66 percent of the area and up to 500 tons of uranium oxide on 34 percent of the area could occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 40 acres could be disturbed due to exploration and development of locatable mineral resources.

The worst-case impact to minerals would occur if the potentially recoverable minerals are not within existing mining claims or claims filed prior to

designation. In that case the potential for recovery of up to 6,934 tons of uranium would be foregone. Because production of this metal is not currently occurring and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur in the near future. Therefore, this alternative would not result in any significant loss of recoverable uranium resources in the foreseeable future.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However, potential land treatment for improvement of elk habitat would be foregone. This could result in continued damage to private fields near Boulder. In addition, disturbance due to exploration of locatable mineral resources could disrupt wildlife populations and result in these species leaving the area.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante MFP and the *Kanab-Escalante Grazing Management EIS*. The 532 AUMs currently allocated in the WSA are controlled by seven livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. There are presently no proposed range improvements for the WSA.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I which generally allows for only natural ecological change, through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative the disturbance from possible road realignment and mineral-related surface disturbance would be reduced from 250

acres to 40 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives may not be met on large portions of the area and visual quality would probably be reduced on the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive. Inventories for purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance on the 40 acres and would mitigate impacts.

RECREATION

Current recreational use is 10,050 visitor days a year and the WSA has outstanding primitive recreational values. If designated, those high quality recreational opportunities would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management would be provided through a Wilderness Management Plan that would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. The 50 visitor days of ORV play activity and/or vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA. Approximately 1.50 miles of way within the WSA would be closed. Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA. Commercial

outfitting would benefit. As recreation use increased other commercial operations based on primitive recreational activities could apply for use of the WSA.

Mineral-related surface disturbance on up to 40 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because wilderness designation would prohibit filing of additional mining claims and require more restrictions on development, wilderness designation would reduce the potential for surface disturbance.

WILDERNESS VALUES

Wilderness designation would contribute to the preservation of the area's wilderness characteristics. Under this alternative, the potential for surface-disturbing activities that could impair wilderness values would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through closure of the area to ORV use, and through closure of the entire area to future mineral leasing and location. Also, the potential land treatment for elk winter habitat would not be allowed.

Designation and management of all 21,896 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude. Solitude would be preserved on approximately 15,500 acres that meet and 6,396 acres that do not meet the standards for outstanding solitude. Naturalness would be preserved on 21,876 acres, and primitive and unconfined recreation would be preserved on 18,100 acres that meet and 3,796 acres that do not meet the standards for outstanding opportunities. The scenic special features in this WSA would also be protected and preserved.

No development of leases is foreseen under this alternative. The anticipated road realignment and mineral-related surface disturbance would, therefore, be reduced from 250 acres to 40 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of solitude and naturalness.

Outstanding opportunities for six recreational activities (backpacking, hiking, horseback riding,

photography, sightseeing, and rockhounding) would be preserved. Although recreational use could increase (refer to Recreation section), use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreational values would be expected.

Thus, it is concluded that wilderness designation and management of all 21,896 acres of the Steep Creek WSA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude (outstanding on 15,500 acres) and primitive recreation (outstanding on 18,100 acres) except in localized areas affected by the surface disturbance related to mineral exploration. In the area as a whole, however, no significant loss of wilderness values would be expected.

LAND USE PLANS AND CONTROLS

The existing BLM Escalante MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Escalante MFP.

The *Garfield County Master Plan* recommends that 18,350 acres of the WSA be designated wilderness and the remainder of the unit be managed for multiple use. This alternative would not be consistent with the Master Plan because of the additional 3,546 acres recommended as wilderness. This alternative would not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. Designating these additional acres would conflict with plans to improve the Boulder to Bullfrog Road. If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 7) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low. Valid existing oil and gas leases and mining claims could be developed but designation would

preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$10,640 of livestock sales and \$2,660 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would only be significant to the commercial outfitters now using the WSA and those that may begin to use the WSA.

Motorized recreational use of the WSA is light. The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 16,075 acres now leased for oil and gas would cause an eventual loss of up to \$48,225 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$17,463 annually in Federal revenues from the 5,821 acres that could be leased without designation. In addition to these rental fees, any potential royalties from lease production could also be foregone.

Recreation-related Federal revenues could increase if the demand for commercial outfitter services increase.

Partial Wilderness Alternative (18,350 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 18,350-acre area designated as wilderness and the 3,546-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, claims would be staked before designation and would eventually be explored and developed, causing an estimated 30 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed.

It is assumed that, within the nondesignated area, only 20 acres would be disturbed sometime in the future due to locatable mineral and oil and gas exploration and development. In addition, up to 50 acres could be disturbed due to realignment and paving of the Burr Trail Road. Overall, 100 acres of surface disturbance would occur within the WSA, 150 acres less than under the No Action Alternative and 60 acres more than with the All Wilderness Alternative. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.

The analysis of the No Action Alternative, based on 250 acres of surface disturbance, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, water, forest, and cultural resources. Therefore, these resources would not be significantly affected by this Partial Wilderness Alternative which assumes 100 acres of surface disturbance.

The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The area designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 13,060 acres of oil and gas leases in the area that would be designated wilderness. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and

development of a potential resource of up to 2.5 million barrels of oil and 15 billion cubic feet of natural gas could be foregone. This would allow recovery of .5 million more barrels of oil and 3 billion more cubic feet of natural gas from the nondesignated area.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Locatable Minerals

There are presently no mining claims within the area that would be designated wilderness. It is assumed, however, that claims would be staked before wilderness designation (worst-case analysis). Development work, extraction, and patenting could occur on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable 6,434 tons of uranium oxide in 66 percent of the WSA and 500 tons of uranium oxide in 34 percent of the WSA falls within the area that would be designated as wilderness under this alternative. Assuming that the locatable minerals are evenly distributed in the WSA and that the mineral deposits were not included in mining claims filed before designation, 83 percent of the potential for recovery of uranium would be foregone. Therefore, the nondesignated area would allow for recovery of 1,178 tons of uranium oxide.

Because these metals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur in the near future. Therefore, this alternative would not prevent recovery of significant amounts of uranium.

LIVESTOCK

The effect of designation of 18,350 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 532 AUMs allocated, 227 would be within the designated portion of the WSA and 305 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 227 AUMs in

the designated portion could be restricted to preserve wilderness values. Because no range improvements have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected.

VISUAL RESOURCES

Because total surface disturbance in the WSA would be 100 acres under this alternative as opposed to 250 acres under No Action and 40 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and somewhat more than under the All Wilderness Alternative. In the portion recommended for designation, 30 acres of surface disturbance resulting from mineral exploration and development could cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 70 acres in the nondesignated portion of the WSA would be disturbed and would not meet VRM Class II objectives. Management objectives in the Class IV area would be met. Disturbance on a total of 100 acres within the WSA would result in localized long-term impairment of visual values but would not significantly affect visual resources in the WSA as a whole. However, if roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I and II objectives might not be met on large portions of the WSA.

RECREATION

Impacts on recreational values and opportunities for the 18,350-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management would be provided through a Wilderness Management Plan that would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use.

Approximately 1.50 miles of ways would be closed to ORV use, which would cause a slight reduction from the ORV use projected in the No Action Alternative.

STEEP CREEK WSA

Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA. Commercial outfitting would benefit. As recreation use increased other commercial operations based on primitive recreational activities could apply for use of the WSA.

If development of valid mining claims occurred, the quality of primitive recreation opportunities would be reduced. However, the potential for mineral development is low, particularly in the designated portion.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 18,350 acres that would be designated wilderness. Size, naturalness (all 18,350 acres affected are natural), outstanding opportunities for solitude (including 14,395 acres that meet the standards and 3,955 acres that do not meet the standards), and primitive recreation (including 16,859 acres that meet and 1,491 acres that do not meet the standards), and special features would be preserved. Although recreational use could increase (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 30 acres in the designated area.

In the designated wilderness area no development of leases is foreseen under this alternative. The assumed mineral-related surface disturbance would therefore be reduced from 180 acres to 30 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of solitude and naturalness in the designated area.

In the 3,546-acre area that would not be designated, there would be 50 acres of disturbance from road realignment and mineral and energy exploration and development activities. Those activities could degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation) from the commencement of activities through rehabilitation. Thus, slight long-term impairment of wilderness

values in the portion that would not be designated would be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Garfield County Master Plan*. The acres recommended as suitable are the same as those recommended for wilderness designation in the Master Plan. This alternative would also allow the proposed improvement for the Boulder to Bullfrog Road.

The existing BLM Escalante MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Escalante MFP. If State lands within the designated portion of the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 7) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low. Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the designated portion of the WSA. Precluding exploration and development of minerals on that area would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by the Partial Wilderness Alternative. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$10,640 of livestock sales

and \$2,660 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would only be significant to the commercial outfitters now using the WSA and those that may begin to use the WSA.

Motorized recreational use of the WSA is light. The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 13,060 acres now leased for oil and gas

in the designated area would cause an eventual loss of up to \$39,180 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$15,870 annually in Federal revenues from the 5,290 acres that could be leased without partial designation. In addition to these rental fees, any potential royalties from lease production could also be foregone. Revenues from existing oil and gas leases on 3,015 acres in the nondesignated area could continue to provide \$9,045 to the Federal Government. In addition, 531 acres not currently leased could provide \$1,593 if they were to be leased.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases.

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North Escalante Canyons/
The Gulch ISA



NORTH ESCALANTE CANYONS/THE GULCHISA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	2
Alternatives Considered and Eliminated from Detailed Study	2
Alternatives Analyzed	2
No Action Alternative	3
All Wilderness Alternative	4
Partial Wilderness Alternative (Proposed Action)	9
Partial Wilderness Alternative	14
Summary of Environmental Consequences	18
AFFECTED ENVIRONMENT	18
Air Quality	18
Geology	18
Soils	18
Vegetation	22
Water Resources	22
Mineral and Energy Resources	22
Wildlife	26
Forest Resources	26
Livestock and Wild Horses/Burros	26
Visual Resources	26
Cultural Resources	27
Recreation	27
Wilderness Values	28
Land Use Plans and Controls	30
Socioeconomics	31
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	32
Analysis Assumptions and Guidelines for All Alternatives	32
No Action Alternative	33
All Wilderness Alternative	36
Partial Wilderness Alternative (Proposed Action)	40
Partial Wilderness Alternative	42
BIBLIOGRAPHY	47

NORTH ESCALANTE CANYONS/THE GULCH ISA

INTRODUCTION

General Description of the Area

The North Escalante Canyons/The Gulch Instant Study Area (ISA) is located in Garfield County approximately 5 miles east of the Town of Escalante, Utah. The ISA contains 119,300 acres of full estate BLM-administered land which includes the North Escalante Canyons Outstanding Natural Area (ONA) (5,800 acres), Escalante Canyon ONA (840 acres), The Gulch ONA (3,430 acres), The Wolverine Petrified Wood Natural Environmental Area (2,213 acres), and portions of Deer Creek Recreation Area (475 acres), Calf Creek Recreation Area (425 acres), and Phipps-Death Hollow ONA (12 acres). The ISA encloses 8,897 acres of State land and 452 acres of split estate lands (Federal surface, State minerals). It is administered by the Escalante Resource Area of the Cedar City District.

The majority of the ISA is characterized by steep-walled canyons, mesas, plateaus, and natural arches. The Escalante River and The Gulch run through the ISA. Much of the ISA is bare rock outcrop. Pinyon-juniper is the major vegetative type.

In general, the climate is temperate and arid with annual precipitation averaging about 10 inches. From June through early September convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates occur primarily from November through March.

Summer temperatures in Escalante, Utah range approximately 30 degrees Fahrenheit (F) with highs in the mid-90s and lows in the mid-60s. Winters in Escalante, Utah have a temperature range of about 27 degrees F with highs in the low 40s and lows of about 15. Snowfall in Escalante generally averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified in Scoping

Two major issues surfaced during the study phase of the North Escalante Canyons/The Gulch ISA:

- The Garfield County Commission (1982) has indicated that designation of a wilderness area conforming to the ISA's boundary could preclude upgrading the Burr Trail Road which forms the northern boundary of the ISA. Potential utility corridors adjacent to the Burr Trail Road could also be precluded by designation.
- Approximately 36,500 acres in the eastern portion of the ISA are in an area considered by the U.S. Department of Energy (DOE, 1983) to have a high certainty to contain relatively large potential resources of uranium.

Issues and concerns specific to North Escalante Canyons ISA raised in the spring of 1984 public scoping meetings (USDI, BLM, 1984a) are responded to below.

1. *Comment:* There should be a corridor wide enough for access roads and pipelines for development of the Circle Cliffs Special Tar Sand Area (STSA) between the Steep Creek WSA and North Escalante Canyons/The Gulch ISA.

Response: Under the All Wilderness Alternative it is assumed that a maintenance-and-use border would exist along the Burr Trail Road. The border would extend from the edge of the road surface up to 100 feet. Under the Partial Wilderness Alternative the designated wilderness area would be set back .25 mile from the Burr Trail Road.

2. *Comment:* Wilderness designation would protect the Escalante River, which is a Nationwide Rivers Inventory segment with potential for study and addition to the National Wild and Scenic Rivers System.

Response: The Escalante River was nominated for study under Section 5(d) of the Wild and Scenic Rivers Act by the Secretaries of Interior and Agriculture on September 11, 1970. Over 15 miles of the river flow through



the ISA. No designation has been made on the river.

3. *Comment:* The area is rich in scenic treasures (Phipps Arch, Bowington Arch, Maverick Natural Bridge, Anasazi ruins and pictographs, and the Escalante River Canyon).

Response: The BLM has long recognized the special scenic values of the ISA. Designating portions of the area as ONAs is evidence of this. The visual resources of the area are discussed in the Visual Resources and Wilderness Special Features sections of this EIS.

4. *Comments:* (1) Wilderness designation of the ISA should include the main canyon, its tributaries and the benches and mesas between them, plus sufficient acreage on the west side of the river to guarantee the preservation of the wilderness character of this area. (2) Why is this ISA not recommended? It has valuable use as a survival course area. Uranium conflicts do not exist. (3) The Draft Site-Specific Analysis (SSA) correctly recommends exclusion of that portion of the ISA which is in the Circle Cliffs STSA; this portion has intrusions (roads and diggings), and designation would conflict with tar sand development. (4) The entire 119,300 acres of this ISA are endorsed for designation. The deletions (Partial Alternative) noted on the scoping brochure map approach too closely to the river. (Alternative boundaries shown on a map were submitted but are not reproduced here.)

Response: During scoping for the Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA and ISA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input, which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the

criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b), and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

5. *Comment:* The existing natural boundaries of the ISA do not provide sufficient protection of its wilderness resources. Much more benchland and mesa area of the rim country must be included.

Response: If the ISA or a portion of it is designated wilderness, it will be managed according to the BLM's "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness values. The effects of this on the ISA wilderness values are described in the Environmental Consequences, All Wilderness Alternative section.

6. *Comment:* The oil and gas (mineral) potential of the ISA is ranked low by Science Applications Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the ISA to be at least moderate. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

No alternatives other than those analyzed below were raised for this ISA during scoping.

Alternatives Analyzed

Four alternatives are analyzed for this ISA: (1) No Action; (2) All Wilderness (119,300 acres); (3) Partial Wilderness (100,300 acres); and (4) Partial Wilderness (54,500 acres). A description of each

alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 119,300-acre North Escalante Canyons/The Gulch ISA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the BLM Escalante Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981a). Neither the 14 sections of State land nor the 452 acres of split estate lands with State minerals within the ISA have not been identified in the MFP for Federal acquisition through exchange or purchase (refer to Map 1). The surface and/or minerals of these lands are analyzed under State ownership. Refer to Appendix 3 for further information on State in-holdings.

The following are specific actions that would occur under this alternative:

- About 82,800 acres would be managed as oil and gas leasing Category 1 (standard stipulations), 13,700 acres would be in Category 3 (no surface occupancy), and 22,800 acres would continue to be in Category 4 as closed to oil and gas leasing. The entire area would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on 1,100 existing mining claims (22,000 acres) and future mining claims that may be found valid. About 10,260 acres of the ISA are part of the Circle Cliffs STSA. Approximately 8,960 acres are involved in lease conversion applications for tar sand development by in-situ methods (USDI, BLM, 1984b). Under this alternative it is assumed that any interim wilderness protection stipulations that may be applied to the leases while the area is under wilderness review would be dropped if the area is not designated.
- The present domestic livestock grazing use in the area would continue as authorized in the MFP (7,115 Animal Unit Months [AUMs]). Use and maintenance of two corals, 3 miles of fence, ten reservoirs, nine improved springs, 2 miles of pipeline, one stock tank, three cabins, and 1 mile of stock trail would continue in a routine manner. New rangeland improvements could be implemented without wilderness considerations. This could include proposed developments of four springs, three reservoirs, one retention dam, one stock tank, 0.5 mile of fence, one well, 8 miles of pipeline, and four water catchments.
- Developments for wildlife, water resources, etc. could be allowed without wilderness consideration if in conformance with the MFP. None are proposed.
- Off-road vehicle (ORV) use would continue to be open on 98,942 acres, including 5 miles of ways within the ISA. ORV use would remain closed on 20,358 acres.
- Except for 425 acres in the Calf Creek Recreation Area, the entire area would be open to forest product harvest. However, there is little, if any, harvest of forest products at the present time, and none is specifically planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class I (13,400 acres), Class II (21,650 acres), Class III (5,600 acres), and Class IV (78,650 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances which threaten human life, property, or high-value resources without concern for wilderness values.
- Activities to gather information would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.
- It is assumed that the No Action Alternative would include the continued designation of 10,082 acres in six locations as ONAs. This includes ORV closure and other management actions on the 10,082 acres somewhat similar to those identified for wilderness management. Management of the ONAs would be a separate action not dependent on the wilderness review process.

ALL WILDERNESS ALTERNATIVE

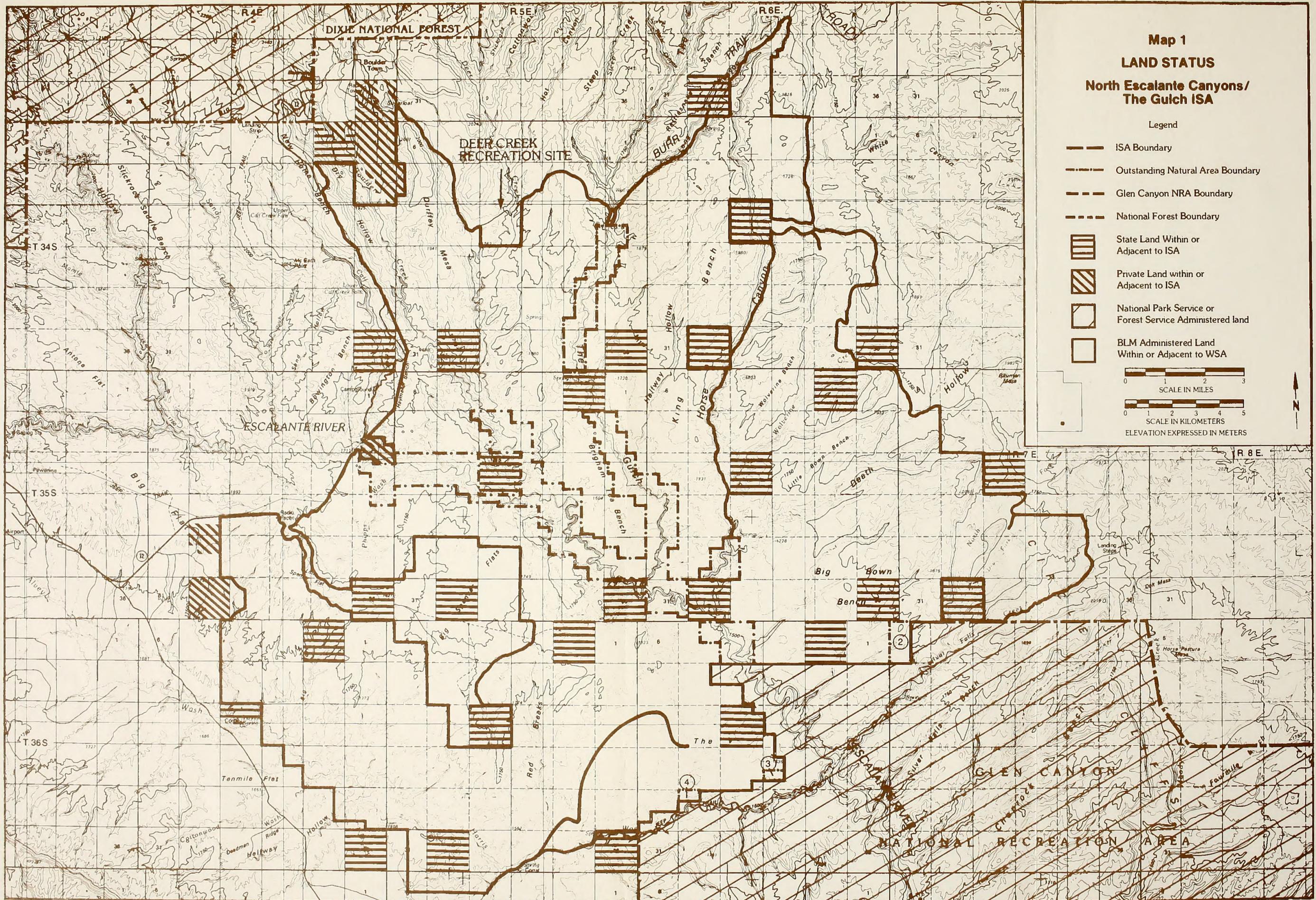
Under the All Wilderness Alternative (refer to Map 2), all 119,300 acres of the North Escalante Canyons/The Gulch ISA would be designated by an act of Congress as part of the NWPS. It would be managed in accordance with the BLM's "Wilderness Management Policy" to preserve its wilderness character.

Upon designation, Federal acquisition of 13 sections of State land (8,257 acres of surface and minerals) along with 452 acres of minerals only (split estate) within the ISA is likely, and would be authorized by purchase or exchange. Six of 13 State sections adjacent to the ISA would probably be exchanged. It is assumed that wilderness management and resulting impacts on acquired State lands would be the same as those on adjacent Federal lands. Acreage figures and quantities (e.g., AUMs, number of leases, etc.) in this analysis are for full Federal lands only.

The following are specific actions that would occur under this alternative:

- All 119,273 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 22,000 acres of 1,100 existing mining claims if determined to be valid. Development of these claims would be regulated by the unnecessary or undue degradation guidelines with wilderness considerations (43 Code of Federal Regulations [CFR] 3809). After designation, 130 existing oil and gas leases, involving about 93,800 acres, would not be reissued upon expiration unless an oil or gas find in commercial quantities is shown or unless leases are converted to combined hydrocarbon (tar sand) leases under provisions of Public Law 97-78. Oil and gas leases converted to combined hydrocarbon leases on up to 10,260 acres (8,960 acres are currently under a conversion application) in the ISA would contain nonimpairment stipulations; therefore, under this alternative, tar sand development on the 10,260 acres could occur only in a manner not degrading to wilderness values.
- Present domestic livestock grazing would continue as authorized in the Escalante Planning Unit MFP. The 7,115 AUMs in the ISA would remain available to livestock as presently allotted. The use and maintenance of rangeland improvements existing at the time of designation, as listed in the No Action Alternative, could continue in the same manner as in the past, based on practical necessity and reasonableness. After designation, new rangeland developments would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that certain criteria are met to adequately protect wilderness values (refer to Appendix 1). It is assumed that the proposed four spring developments, 5-mile fence, and four catchments would likely be allowed. It is assumed that the proposed three reservoirs, one retention dam, one stock tank, one well, and 8 miles of pipeline would likely not be allowed.
- New water resource improvements or watershed activities not related to rangeland or wildlife management would be allowed after designation only if these enhance wilderness values, correct conditions presenting imminent hazard to life or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). Except for the reservoirs and springs already mentioned, no water resource developments are located in the North Escalante Canyons/The Gulch ISA, and none are planned.
- New wildlife transplants or habitat improvements would be allowed after designation only if these are compatible with wilderness values. None are planned in this ISA.
- The entire ISA would be closed to ORV use except for: (1) those users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland improvements, including those mentioned above. About 5

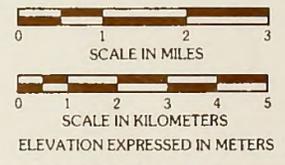
NORTH ESCALANTE CANYONS/THE GULCH ISA



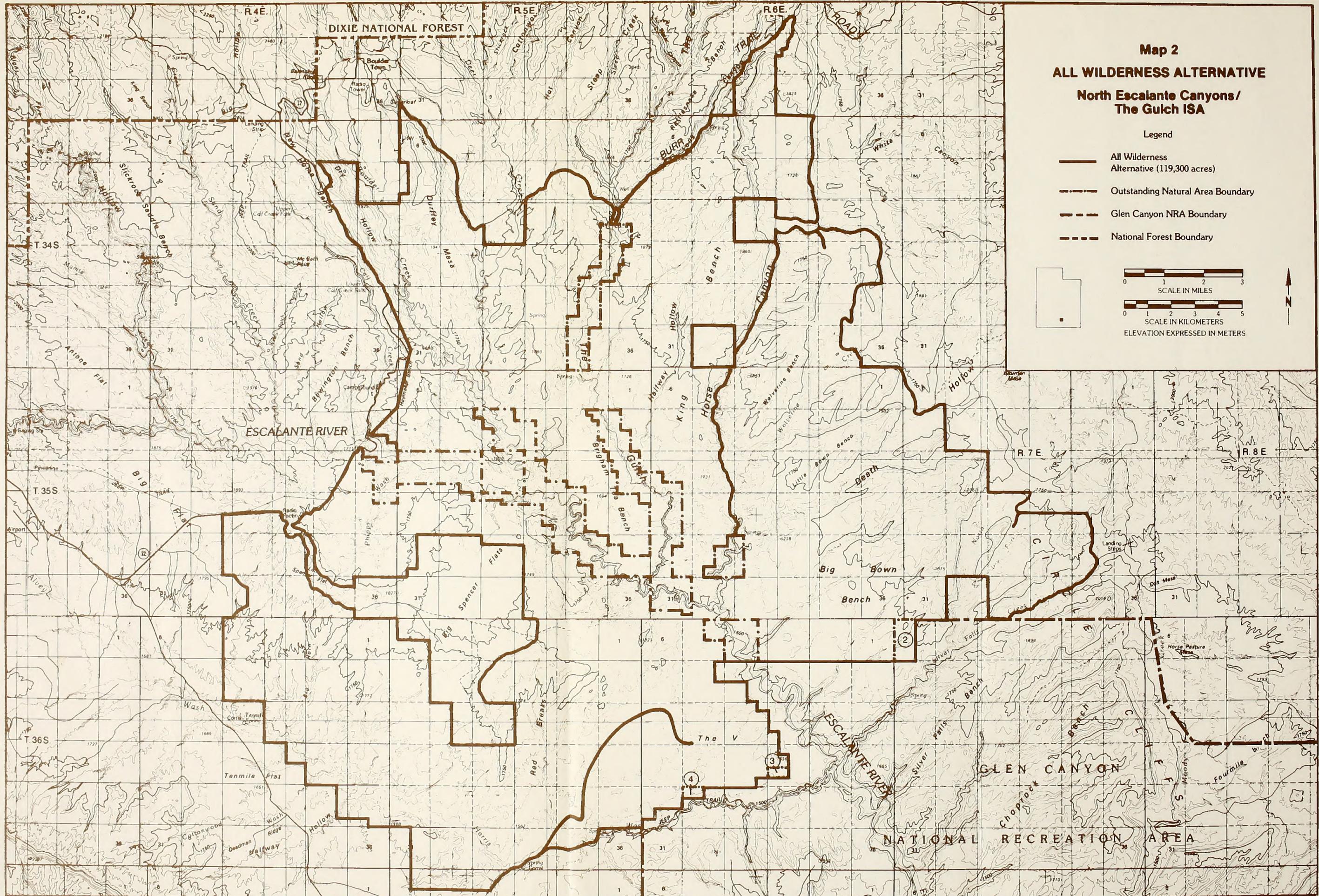
Map 1
LAND STATUS
**North Escalante Canyons/
 The Gulch ISA**

Legend

-  ISA Boundary
-  Outstanding Natural Area Boundary
-  Glen Canyon NRA Boundary
-  National Forest Boundary
-  State Land Within or Adjacent to ISA
-  Private Land within or Adjacent to ISA
-  National Park Service or Forest Service Administered land
-  BLM Administered Land Within or Adjacent to WSA



NORTH ESCALANTE CANYONS/THE GULCH ISA



Map 2
ALL WILDERNESS ALTERNATIVE
North Escalante Canyons/
The Gulch ISA

Legend

- All Wilderness Alternative (119,300 acres)
- Outstanding Natural Area Boundary
- Glen Canyon NRA Boundary
- National Forest Boundary

SCALE IN MILES
 SCALE IN KILOMETERS
 ELEVATION EXPRESSED IN METERS

NORTH ESCALANTE CANYONS/THE GULCH ISA

miles of existing vehicular ways in the ISA would not be available for vehicular use, except as indicated above. About 8 miles of road along Horse Canyon (including two State sections) and 6 plus miles along the southern boundary of the ISA would be "cherry-stemmed." About .5 mile of road north of Wolverine Bench also would be "cherry-stemmed." These roads would remain open to vehicles. About 20 miles of the ISA boundary follow existing paved roads and 20 miles follow unpaved roads, which would remain open to vehicular travel. About 12 miles of boundary road are known as the Burr Trail (or Boulder to Bullfrog) Road, which has potential for realignment and paving.

- A specific Wilderness Management Plan would be developed to govern use and protection of the wilderness area. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along the approximately 40 miles of roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet. Realignment of the Burr Trail Road beyond this 100-foot border would not be allowed, unless specifically approved by Congress.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any planned.
- Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the area would be taken in instances which (1) threaten human life, property, or high-value resources on adjacent nonwilderness lands; or (2) where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting

would be limited to hand and aerial techniques.

- Any activity to gather information about natural resources in the area would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only under conditions that would ensure minimum disturbance to wilderness values.

PARTIAL WILDERNESS ALTERNATIVE (100,300 ACRES)

(PROPOSED ACTION)

In this alternative, 100,300 acres of the North Escalante Canyons/The Gulch ISA would be designated as wilderness (refer to Map 3). This alternative was suggested during the EIS scoping process as 89,556 acres; however in checking, BLM corrected the acreage figures. It is the same area on the map that was received from the scoping commentor. The objective of this alternative is to analyze as wilderness that portion of the ISA that would have the fewest conflicts with potential future mineral development. It also includes a boundary set-back .25 mile along the northern part of the ISA to avoid conflict with potential realignment and paving of the Burr Trail Road. The major area that would not be designated has a concentration of mining claims and is within the Circle Cliffs STSA. The 19,000-acre area that would not be designated as wilderness would be managed in accordance with the Escalante MFP, as described for the No Action Alternative. The 100,300-acre area that would be designated as wilderness would be managed in accordance with

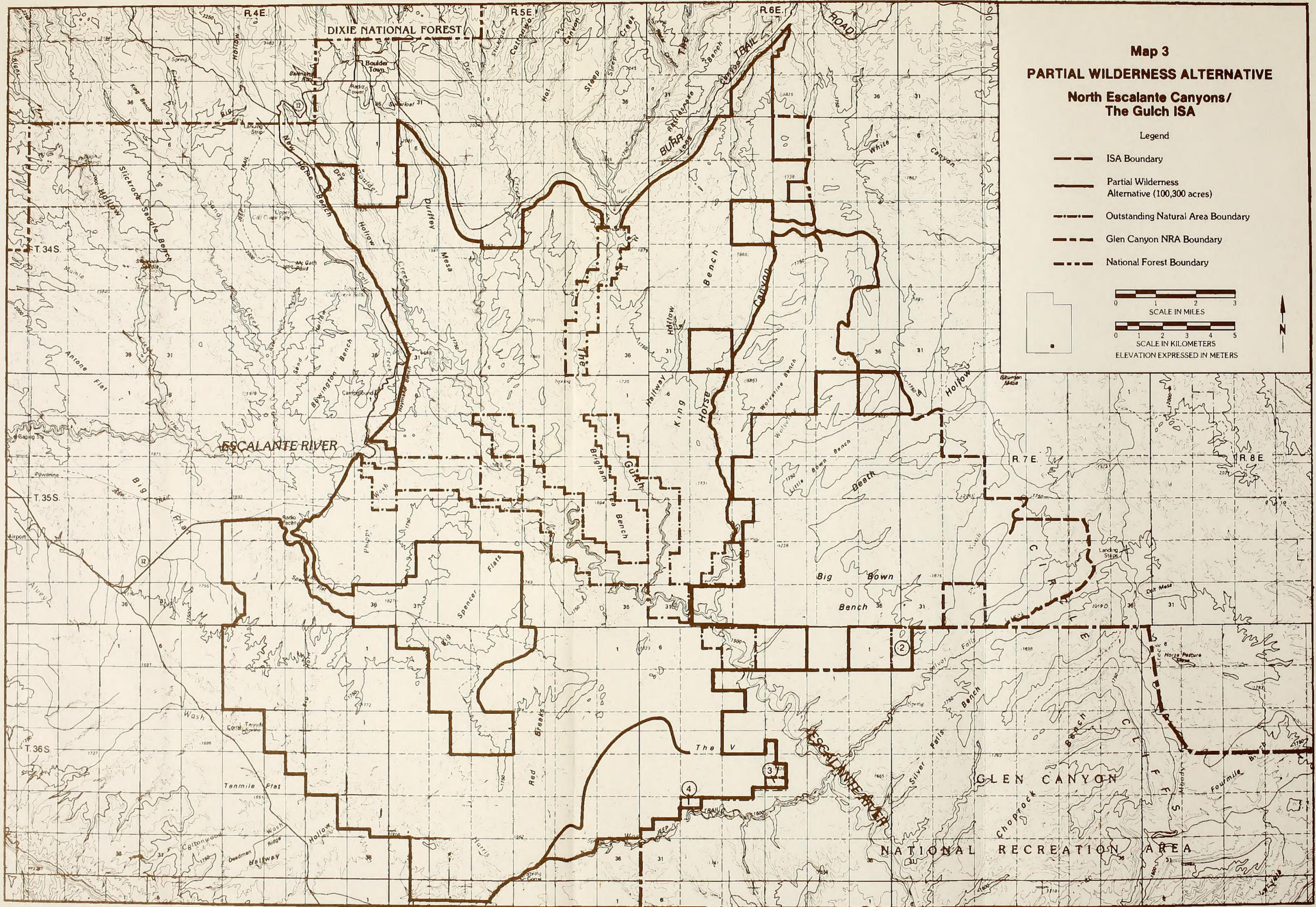
the BLM's "Wilderness Management Policy," as described in the All Wilderness Alternative.

Upon designation, Federal acquisition of 7 sections of State land (7,040 acres of surface and minerals) along with 452 acres of minerals only (split estate) within the ISA is likely, and would be authorized by purchase or exchange. Nine adjacent State sections would be exchanged. Should land transfers be made, it is assumed that impacts on acquired State lands would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. Refer to Appendix 3 for further information on State in-holdings.

A summary of specific actions for this alternative follows:

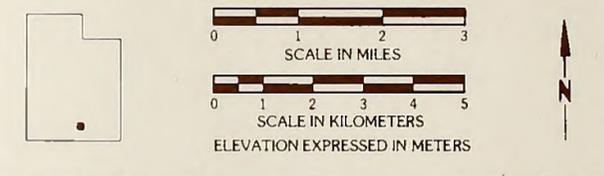
- The 100,300 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 100,300-acre area, development, extraction, and patenting would be allowed to continue on 2,600 acres of 130 existing mining claims, provided these are valid. Development on these claims would be regulated by the unnecessary or undue degradation guidelines with wilderness consideration. The existing oil and gas leases, which cover 78,834 acres, would not be reissued upon expiration unless a find in commercial quantities is presented or they are converted to combined hydrocarbon leases. About 1,400 acres of leases that could be converted to combined hydrocarbon leases occur in the 100,300-acre area that would be designated wilderness. These leases would contain nonimpairment stipulations limiting development to that which could occur in a manner not degrading to wilderness values. The 19,000-acre area that would not be designated contains about 7,560 acres that could be converted to combined hydrocarbon leases. This conversion could occur without wilderness consideration. The 19,000 acres would be managed as leasing Categories 1, 14,353 acres; 3, 817 acres; and 4, 3,830. This area would remain open to mineral location, leasing, and sale. Development, extraction, and possible patent of existing claims (19,400 acres) and future mining claims could occur in the 19,000-acre area if claims are valid. Development of existing leases (14,966 acres) and future leases could occur without concern for wilderness values.
- Domestic livestock grazing would continue at present levels (5,957 AUMs) in the 100,300-acre area that would be designated. Existing rangeland improvements (seven spring developments, six reservoirs, 2 miles of pipeline, one stock tank, 2 miles of fence, two corrals, three cabins, and 1 mile of stock trail) in the 100,300-acre area could be used and maintained in the same manner as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources, as long as wilderness protection criteria are met (refer to Appendix 1). It is assumed that the proposed facilities in the designated area (one catchment) would be allowed. The proposed retention dam, stock tank, well, and 8 miles of pipeline would probably not be allowed. In the 19,000 acres that would not be designated as wilderness, use of 1,158 AUMs would continue as authorized in the current MFP for the Escalante Planning Unit. Existing rangeland improvements (two springs, four reservoirs, and 1 mile of fence) could be used and maintained without wilderness considerations. In the 19,000-acre area, new rangeland improvements could be developed without concern for wilderness values. Proposed facilities include four spring developments, three reservoirs, three catchments, and .5 mile of fence.
- In the 100,300-acre area that would be designated wilderness, new water resource developments or watershed activities not related to rangeland or wildlife management would be allowed only if these enhance wilderness, correct conditions imminently hazardous to life or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining 19,000-acre area, water resource improvements would be allowed without concern for wilderness values. None are proposed.
- In the 100,300-acre area that would be designated wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the 19,000-acre area that would not be designated wilderness, wildlife transplants or habitat improvements would be allowed

NORTH ESCALANTE CANYONS/THE GULCH ISA



Map 3
PARTIAL WILDERNESS ALTERNATIVE
North Escalante Canyons/
The Gulch ISA

- Legend
- ISA Boundary
 - Partial Wilderness Alternative (100,300 acres)
 - Outstanding Natural Area Boundary
 - Glen Canyon NRA Boundary
 - National Forest Boundary



NORTH ESCALANTE CANYONS/THE GULCH ISA

without concern for wilderness values. None are proposed.

- The 100,300-acre area that would be designated wilderness would be closed to ORV use. Within this area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. About 4 miles of existing vehicular ways in the 100,300-acre area would not be available for vehicular use, except if the criteria given in the All Wilderness Alternative were met. Two "cherry-stemmed" roads would remain open for vehicle use. The 19,000-acre nondesignated area, including 1 mile of way, would be open to ORV use. All 26 miles of road forming the boundary of the ISA would be open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 100,300-acre area that would be designated. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products in the 100,300-acre area that would be designated wilderness would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining 19,000 acres would be open to forest product harvest. However, there is no harvest of forest products in the ISA at the present time, nor is any planned.
- Visual resources in the 100,300-acre area that would be designated would be managed in accordance with VRM Class I standards. The remaining nondesignated 19,000 acres would be managed as Class II (7,290 acres) and Class IV (11,710 acres).
- Within the 100,300-acre area that would be designated wilderness, measures to control fire, insects, noxious weeds, or disease would be taken only in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change

to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to aerial and hand techniques. On the remaining 19,000 acres that would not be designated, these measures could be taken in instances which threaten human life and property without concern for wilderness values.

- In the 100,300 acres that would be designated wilderness, any activity to gather information about natural resources would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness values. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternative exists. In the 19,000-acre area, activities to gather information about natural resources would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- In the 100,300 acres that would be designated wilderness, hunting would be limited to nonmotorized means. In the 19,000-acre area that would not be designated, hunting would be allowed subject to applicable State and Federal laws and regulations.
- In the 100,300-acre area that would be designated wilderness, predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be allowed. A predator control program would only be approved under conditions that would ensure minimum disturbance to wilderness values. In the 19,000-acre area, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock without consideration given to protection of

NORTH ESCALANTE CANYONS/THE GULCH ISA

wilderness values. Methods of control would be determined as appropriate.

PARTIAL WILDERNESS ALTERNATIVE (54,500 ACRES)

In this Partial Wilderness Alternative, 54,500 acres of the North Escalante Canyons/The Gulch ISA would be designated as wilderness (refer to Map 4). The objective of this alternative is to identify and analyze that portion of the ISA which includes and immediately surrounds The Gulch and North Escalante ONAs. It also includes a boundary set-back of up to .25 mile along the northern part of the ISA to avoid conflict with potential realignment and paving of the Burr Trail Road. The 64,800-acre area within the ISA that would not be designated wilderness would be managed in accordance with the Escalante MFP, as described in the No Action Alternative. The 54,500-acre area that would be designated as wilderness would be managed in accordance with BLM's "Wilderness Management Policy," as described in the All Wilderness Alternative. This alternative would likely involve Federal acquisition of five sections of State land (3,145 acres of surface and minerals) along with 452 acres of minerals only (split estate). Three adjacent State sections would be exchanged. It is assumed that wilderness management and resulting impacts on acquired State lands would be similar to those analyzed for Federal lands. Figures and quantities for this alternative are for Federal lands only.

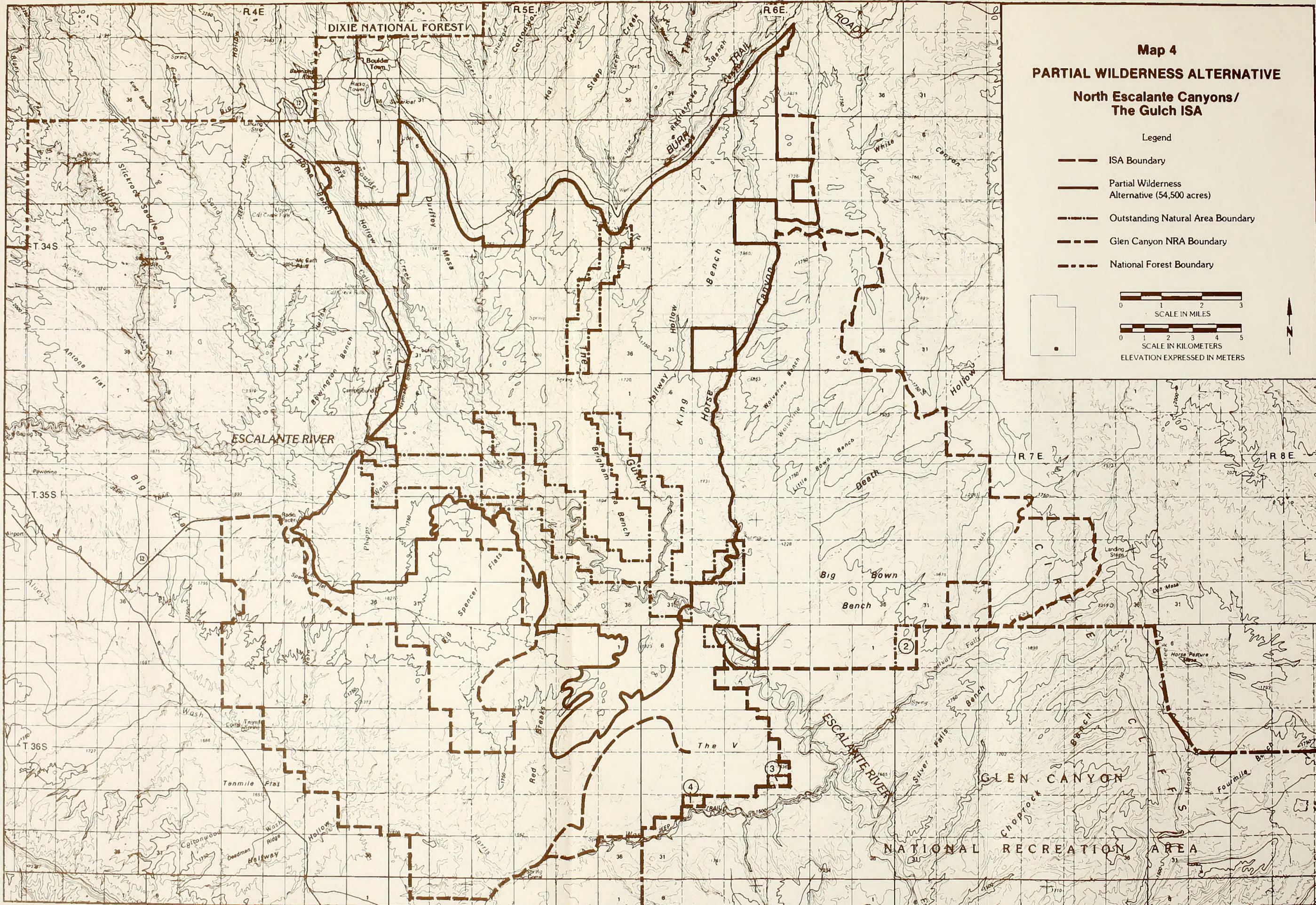
A summary of specific actions for this alternative follows:

- The 54,500 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. No mining claims are presently found in this area. However, if claims are located prior to designation, development work, extraction, and patenting would be allowed, provided these are valid. Development on these claims would be regulated by the unnecessary or undue degradation guidelines with wilderness considerations. Existing oil and gas leases, which cover 30,160 acres, would not be reissued upon expiration unless a find in commercial quantities is made. There are no leases that may be converted to combined hydrocarbon leases in the 54,500-acre area. The 64,800-acre area that would not be designated wilderness would be managed as leasing Category 1 (standard stipulations, 59,700 acres), Category 3 (no surface occupancy, 4,800 acres), and

Category 4 (closed to leasing, 300 acres). This area would remain open to mineral location, leasing, and sale. Development, extraction, and possible patent of 1,100 existing claims (22,000 acres) and future mining claims could occur in the 64,800-acre area if claims are valid. Development of existing leases (63,640 acres) and future leases (including the 8,960 acres of existing leases in this area that may be converted to combined hydrocarbon leases) in the 64,800-acre area could be developed without concern for wilderness values.

- Domestic livestock grazing in the ISA would continue as presently authorized in the MFP (5,167 AUMs) in the 54,500 acres that would be designated wilderness. Existing rangeland improvements (one corral, 2.5 miles of fence, six reservoirs, one spring, 1 mile of stock trail, and two cabins) in the 54,500-acre area could continue to be maintained in the same manner as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources, as long as wilderness protection criteria are met (refer to Appendix 1). Proposed facilities in the designated area include two spring developments, one well, one water catchment, and one retention dam. It is doubtful if the retention dam and well could be built in a manner nonimpairing to wilderness. In the 64,800-acre area that would not be designated, use of 1,948 AUMs would continue as authorized in the current MFP for the Escalante Planning Unit. Existing rangeland improvements (one corral, .5 mile of fence, four reservoirs, eight improved springs, 2 miles of pipeline, one stock tank, and one cabin) could be used and maintained. In the 64,800-acre area, proposed rangeland improvements (including two spring developments, three reservoirs, 8 miles of pipeline, one stock tank, .5 mile of fence, and three water catchments) could be developed without concern for wilderness values.
- In the 54,500-acre area that would be designated wilderness, new water resource developments or watershed activities not related to rangeland management would

NORTH ESCALANTE CANYONS/THE GULCH ISA

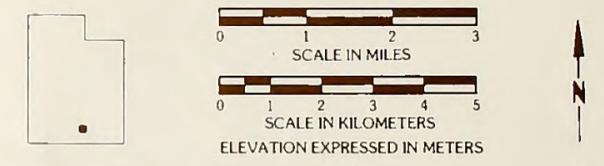


Map 4
PARTIAL WILDERNESS ALTERNATIVE

**North Escalante Canyons/
The Gulch ISA**

Legend

- ISA Boundary
- Partial Wilderness Alternative (54,500 acres)
- - - Outstanding Natural Area Boundary
- · · · · Glen Canyon NRA Boundary
- · - · - National Forest Boundary



be allowed only if these enhance wilderness, correct conditions imminently hazardous to health or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining 64,800-acre area, water resource improvements would be allowed without concern for wilderness values. None are proposed.

- In the 54,500 acres that would be designated wilderness, wildlife transplants or habitat improvements would be allowed only if these are compatible with wilderness values. In the 64,800 acres that would not be designated, wildlife transplants or habitat improvements would be allowed without concern for wilderness values.
- The canyons and benchlands comprising the 54,500 acres that would be designated wilderness would be closed to ORV use. Within this area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. This alternative excludes all vehicular ways in the ISA from the proposed wilderness acreage. All "cherry-stemmed" roads are also excluded from the designated portion of the ISA. The 64,800-acre area, including 5 miles of ways, would be open to ORV use. All 22 miles of roads forming the boundary of the ISA would be open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 54,500 acres that would be designated wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products in the 54,500 acres that would be designated wilderness would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining 64,800 acres would be open to forest product harvest. However, there is no harvest in the ISA at the present time, nor is any planned.
- Visual resources on the 54,500 acres that would be designated wilderness would be managed in accordance with VRM Class I standards. The remaining 64,800 acres would be managed as Class I (1,560 acres), Class II (11,720 acres), and Class IV (51,520 acres).
- Within the 54,500-acre area, measures to control fire, insects, noxious weeds, or disease would be allowed only in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse effect on wilderness values. It is assumed that firefighting would be limited to aerial and hand techniques. On the remaining 64,800 acres, these measures could be taken in instances which threaten human life and property without concern for wilderness values.
- In the 54,500 acres that would be designated wilderness, any activity to gather information about natural resources would be allowed by permit, provided it was accomplished in a manner compatible with preservation of wilderness values. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternative exists. In the 64,800-acre area, any activities for the purpose of gathering information about natural resources would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- In the 54,500 acres that would be designated wilderness, hunting would be limited to nonmotorized means. In the nondesignated 64,800 acres, hunting would be allowed subject to applicable State and Federal laws and regulations.
- In the 54,500 acres that would be designated wilderness, predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible

threat to other animals or to wilderness visitors. Poison baits or cyanide guns would not be allowed in the area that would be designated wilderness. A predator control program would be approved only under conditions that would ensure minimum disturbance to wilderness values. In the 64,800 acres that would not be designated wilderness, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock without concern for wilderness values. Methods of control would be determined as appropriate.

Summary of Environmental Consequences

Table 1 presents the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The ISA and surrounding area have been designated as a Prevention of Significant Deterioration (PSD) Class II area under the 1977 Clean Air Act Amendments. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of the BLM (USDI, BLM, 1982b). Capitol Reef National Park is the closest Class I area to the ISA. It is located 6 miles east of the ISA.

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit; however, data collected from various sites (Page, Arizona, Capitol Reef National Park, and Four Mile Bench, Kane County, Utah) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

GEOLOGY

The North Escalante Canyons/The Gulch ISA is in the Canyonlands section of the Colorado Plateau Physiographic Province. Steep-walled

canyons, mesas, and plateaus are the major landforms in this section. Four arches (Maverick, Bowington, Phipps, and an unnamed arch in Long Canyon) occur in this area.

Elevations range from about 6,800 feet above sea level on top of King Bench along the top of the Circle Cliffs in the northeast part of the ISA and on top of Durffey's Mesa about 2 miles southeast of Boulder town in the northwest part of the ISA, to about 4,800 feet above sea level along the Escalante River in the southeast corner of the ISA. Major drainages in the ISA include the Escalante River, Deer Creek, Boulder Creek, The Gulch, Horse Canyon, and Harris Wash.

Rocks of Triassic and Jurassic Age, totaling about 3,000 feet, crop out in the ISA (Weir and Lane, 1981). Underlying Paleozoic rocks are more than 4,000 feet thick (Weir and Lane, 1981). Grayish-orange, crossbedded sandstone of the Navajo Sandstone forms the most extensive outcrops. Older formations crop out only in the eastern part of the area and along the Escalante River and its major tributaries. The Page Sandstone and Carmel Formation cap a few mesas in the central part of the area and form the major outcrops along the southwestern edge of the area.

In most of the area the rocks dip gently to the southwest. Two major folds interrupt this prevailing dip, the Collett Canyon anticline and the Harris Wash syncline. Both folds are relatively narrow and plunge generally southward. Normal faults, having a displacement of a few feet to about 150 feet, locally cut the western flank of the Harris Wash syncline.

Soils

The major part of the ISA is rockland. Rockland consists of exposed bedrock, mostly sandstone and limestone with gentle to steep slopes. These areas have very little vegetation with native vegetation growing in crevices and pockets of soil material (Wilson et al., 1975). Bare rock is estimated to be from 50 to 70 percent of the land type. Shallow and very shallow soils make up 20 to 40 percent of this type. The remaining 5 to 10 percent are deep to moderately deep soils.

Sandy soils occur in the northwest corner of the ISA (New Home Bench). Runoff and sediment production from these soils are low, and they are subject to soil blowing.

Light-colored soils of valleys, terraces, and mesas occur along the eastern boundary of the ISA. Runoff is medium to rapid, and sediment production is moderate to low.

**SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
NORTH ESCALANTE CANYONS/THE GULCH ISA**

Resource	Alternatives		
	No Action	All Wilderness (119,300 Acres)	Partial Wilderness Designation (100,300 Acres) (Proposed Action)
Mineral and Energy Resources	<p>Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 14 million barrels of recoverable oil from tar sand. The potential deposit of up to 500 tons of uranium on 6 percent of the area and a potential deposit of 3,600 tons of uranium on 31 percent of the area could be developed.</p>	<p>Oil, gas, and tar sand potential likely would not be recovered. Uranium oxide potential may also be foregone. Due to the low likelihood of recovery of these minerals, however, the loss of development opportunity would not be significant.</p>	<p>Although likelihood is low, 0.5 million barrels of oil, 3 billion cubic feet of natural gas, and 38 million barrels of oil from tar sand could be developed. Recovery of 3,680 tons of uranium in the nondesignated area would be allowed although development potential is low.</p>
Wildlife	<p>Less than 1 percent of the wildlife habitat in the ISA would be affected by mineral and energy development. Wildlife would be affected only on the disturbed sites. Wildlife would benefit from new water sources. Four spring developments, four water catchments, three reservoirs, one well and one stock tank could be developed.</p>	<p>Wildlife would benefit from preservation of solitude. However, if future water improvements in this ISA were curtailed, potential habitat for deer and nongame species would be reduced.</p>	<p>The effect of this alternative would be about the same as under the All Wilderness Alternative. Solitude would be preserved on 84 percent of the ISA. Most of the water developments (four springs, three reservoirs and three catchments) would be in the nondesignated area and could be developed without consideration of wildlife values.</p>
Livestock	<p>Grazing of 7,115 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of four springs, three reservoirs, one retention dam, one stock tank, 0.5 mile of fence, one well, 8 miles of pipeline, and four water catchments, could be constructed to improve livestock distribution.</p>	<p>Grazing of 7,115 AUMs and maintenance of existing developments would continue. Proposed new developments, including three reservoirs, one stock tank, one well, 8 miles of pipeline and one retention dam, might not be allowed. Little effect on current livestock management is expected but poor livestock distribution would remain a problem in some areas.</p>	<p>Grazing of 5,957 AUMs on the designated portion and 1,158 AUMs on the nondesignated portion would continue. Proposed new developments within the designated portion may not be allowed. Proposed developments in the nondesignated area (four springs, three reservoirs, three catchments and 0.5 mile of fence) could be constructed and would allow for improved livestock distribution.</p>
Visual Resources	<p>The quality of visual resources could be impaired on up to 380 acres.</p>	<p>Visual quality could be impaired on 40 acres.</p>	<p>The effect of this alternative would be similar to that of the No Action Alternative. However, solitude would be preserved on only 46 percent of the ISA. Many of the proposed water developments (two springs, three reservoirs, three catchments and one stock tank) would be in the nondesignated area and could be constructed without consideration of wilderness values.</p> <p>Effect would be essentially the same as with the No Action Alternative.</p>

Visual quality could be impaired on 280 acres.

Visual quality could be impaired on 245 acres.

Visual quality could be impaired on 40 acres.

The quality of visual resources could be impaired on up to 380 acres.

Visual Resources

TABLE 1 (continued)
 SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
 NORTH ESCALANTE CANYONS/THE GULCH ISA

Resource	Alternatives		
	No Action	All Wilderness (119,300 Acres)	Partial Wilderness Designation (100,300 Acres) (Proposed Action)
Recreation	Overall recreational use could increase from the current 25,500 visitor days per year to 38,000 at the end of 20 years. Five miles of ways would be left open to ORV use although not presently used for ORV travel.	Approximately 5 miles of ways within the ISA would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness.	Recreational impacts on the designated area would be as described in the All Wilderness Alternative; however, approximately 4 miles of ways would be closed to ORV use. Little changes in recreational use is expected in the nondesignated area due to the limited recreational values.
Wilderness Values	Wilderness values could be lost on up to 380 acres, but the values in the rest of the ISA as a whole would not be affected.	Wilderness values would be protected, except on up to 40 acres that may be disturbed under valid existing mineral rights.	In the designated area, wilderness values would be protected except on 10 acres disturbed under valid existing rights. In the 19,000-acre area not designated there would be 235 acres of disturbance from mineral and energy disturbance. Of the areas meeting Wilderness Act criteria for naturalness, solitude and primitive and unconfined recreation, 84 percent, 80 percent and 83 percent respectively would be protected within the designated portion.
Land Use Plans and Controls	This alternative would be partially inconsistent with the <i>Garfield County Master Plan</i> which recommends a portion of the unit be designated wilderness. It would be consistent with County plans for improvement of the Burr Trail Road, State of Utah plans, and the current BLM Escalante MFP. It would not complement the NPS proposal for wilderness designation for the adjacent Glen Canyon NRA.	This alternative would complement the NPS wilderness proposal in Glen Canyon NRA. It would partially conflict with the <i>Garfield County Master Plan</i> which recommends a portion of the ISA be designated wilderness. If State lands within the ISA are exchanged for lands outside the ISA, it would not conflict with the policy of the State of Utah. Designation would be an amendment to the BLM Escalante MFP. Protection of wilderness values could prevent improvement of the Burr Trail Road.	Effects would be about the same as under the All Wilderness Alternative on the 54,000 acres designated wilderness. 10 acres could be disturbed due to mineral exploration activities. 280 acres would be disturbed at one time from mineral and energy activities in the area not designated. Of the areas meeting the Wilderness Act criteria for naturalness, solitude and primitive and unconfined recreation, 46 percent, 61 percent and 58 percent respectively would be protected in the designated portion.

TABLE 1 (continued)
 SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
 NORTH ESCALANTE CANYONS/THE GULCH ISA

Resource	Alternatives		
	No Action	All Wilderness (119,300 Acres)	Partial Wilderness Designation (100,300 Acres) (Proposed Action)
Socio-economics	Annual local sales of less than \$356,550 and Federal revenues of up to \$336,186 would continue. 2,700 acres open to oil and gas leases that are not currently leased would bring up to \$8,100 additional Federal lease fee revenues per year.	Annual local sales of less than \$356,550 and Federal revenues of up to \$10,411 would continue. Unrenewed oil and gas leases and loss of future leasing would result in reduction of up to \$289,500 in annual Federal revenues. Opportunities for future increases in local employment and income from mineral and energy development could be reduced in the ISA.	Effects would be about the same as for the All Wilderness Alternative except that annual Federal revenues in oil and gas leasing of approximately \$236,500, \$44,900 less than the All Wilderness Alternative, would be lost as leases were phased out.
			Effects of this alternative would be about the same as All Wilderness Alternative. Approximately \$90,481 per year in Federal oil and gas leasing revenue would be lost as leases were phased out.

Highly erodible soils occur adjacent to Harris Wash and between Red Breaks and Big Horn Wash. Twenty percent of this association consists of badland and rock outcrop. Outcrops mainly consist of sandstone. Runoff is moderate to high and sediment production is high. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	2,385	2	6,440
Moderate	1.3	75,142	63	97,680
Slight	0.6	17,890	15	10,730
Stable	0.3	23,882	20	7,160
Total		119,300	100	115,570

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

Pinyon-juniper (92,912 acres) is the most common existing vegetation type in the ISA. Large barren areas (26,188 acres) adjacent to the Escalante River, The Gulch, Deer Creek, and Boulder Creek Canyons are primarily slickrock and support very sparse vegetation. Riparian vegetation (vegetation that is associated with permanent waters) can be found on about 200 acres along the Escalante River, Boulder Creek, Deer Creek, Dry Hollow, The Gulch, and Willow Gulch.

The North Escalante Canyons/The Gulch ISA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the ISA are juniper-pinyon woodland (78,740 acres), galleta-threeawn shrubsteppe (27,160 acres) and salt brush greasewood (13,400). PNV is the vegetation type that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

No threatened and endangered plants are known to occur in the ISA. Two species (*Silene peter-sonni* var. *minor* and *Astragalus barneby*) are not officially listed but are undergoing review for

threatened or endangered status. These species are on BLM's sensitive species list and may occur in the ISA.

Water Resources

The ISA contains nine developed and eight undeveloped springs and approximately 42.4 miles of perennial streams in the Escalante River drainage. These streams include the Escalante River, Boulder Creek, Deer Creek, The Gulch, Dry Hollow, and Harris Wash. Flash floods are common on these streams from July to mid-September during the thunderstorm season. The most prevalent water quality problem results from suspended sediment which is a direct result of flooding.

Water rights within the ISA total 95.39 acre-feet annually. This water is allocated to the BLM for livestock watering. The State of Utah has been allocated 20.16 acre-feet of water for livestock watering in State sections enclosed within the ISA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. DOE, had each WSA and ISA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 2+ was assigned to the North Escalante Canyons/The Gulch ISA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the ISA.

If the ISA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The energy and mineral resource rating summary is given in Table 3 below. (No rating for the tar sand resource was given by SAI, 1982.)

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil, less than 60 billion cubic feet of gas
Uranium (69 percent of ISA)	f2	c3	Less than 500 tons uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f2	c4	.05 to 15 megawatts
Uranium (31 percent of ISA)	f4	c4	Approximately 3,600 tons uranium oxide

Source: SAI, 1982.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The ISA could contain deposits of copper that is currently listed as a strategic and critical material (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand.

LEASABLE MINERALS

Oil and Gas

The oil and gas capabilities of the region, including the Escalante Canyon area, have been reviewed by Heylman (1965), Kunkel (1965), Doelling (1975), Weir and Lane (1981), and SAI (1982).

Twenty-three wildcat wells, including 11 wells within the ISA, have been drilled in central Garfield County (Doelling, 1975). The majority of the wells were drilled on anticlines into Permian strata. Shows of oil and gas were rare and all the wells have been abandoned. Most of the obvious structural traps have been tested at least in part. Stratigraphic traps within the deeply buried rocks

of the region are possible, but none have yet been found.

The Collett anticline is the most obvious structure in the ISA that has an oil and gas potential, and in some respects this anticline resembles the oil-productive Upper Valley anticline located approximately 20 miles west of the ISA. However, the closure on the Collett anticline is considerably less than on the Upper Valley anticline (Irwin, 1976), and from a structural standpoint the oil and gas favorability of the Collett anticline is therefore lower. It should be noted that 12 miles of the central portion of the Collett anticline occur within the ISA. The anticline extends to the northwest 8 miles beyond the northern boundary of the ISA and 10 miles to the southeast beyond the southern boundary of the ISA. There is no evidence to indicate that the oil and gas favorability along the Collett anticline within the ISA differs in any way from the favorability along the Collett anticline outside the ISA.

SAI (1982) has estimated that the recoverable oil resources of the Western Rocky Mountain Region (Idaho, Nevada, Arizona, Utah, western Colorado, and western New Mexico) are between 2 and 8 billion barrels of oil. The potential undiscovered petroleum resources in such a field may represent between 0.1 and 0.5 percent of the potential of the region.

SAI (1982) estimates this unit to have a low certainty (c1) for the occurrence of small-sized oil (less than 10 million barrels oil) and gas (no more than 60 billion cubic feet) fields (f2). Any such field would probably be associated with the Collett anticline in the southwestern portion of the ISA. It is unlikely that the potential exists for more than one such field in the ISA. Fields of this size in Utah typically have an areal extent of about 2,500 acres and require about 160 acres for developmental facilities such as roads, pads, ponds, etc. Probability for development is low.

Under the Escalante MFP, 22,800 acres within the ISA are protected from oil and gas activities and are closed to oil and gas leasing. A roughly 1-mile-wide perimeter around this closed area, totaling 13,700 acres, may be explored by directional drilling from outside areas allowing surface occupancy. The remaining 82,800 acres are open to leasing subject to the standard use stipulations. Within the ISA there are presently 130 oil and gas leases covering 93,800 acres. Of the remaining 25,500 acres not leased, 2,673 acres are open to leasing. Sixty-four leases (27,100 acres) were issued prior to October 21, 1976 and 66 leases (66,700 acres) were issued after October 21, 1976.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in ISAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981a). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Coal

The Kaiparowits Coal Field lies a few miles to the west and is the nearest occurrence of potentially economic coal. All coal-bearing rocks in this field, as well as all other fields in southern Utah, are of Cretaceous Age. No other coal-bearing rocks with commercial potential are known from southern Utah (Doelling and Graham, 1972).

The ISA is underlain by rocks of Jurassic Age and older. Because these rocks are not coal-bearing anywhere in the region and Cretaceous rocks have been removed by erosion, no potential exists for the occurrence of commercial quantities of coal in the study area. SAI has therefore assigned the ISA a low favorability rating (f1) for coal, with a high certainty (c4) that it does not occur.

Tar Sand

Approximately 10,260 acres in the southeast portion of the ISA are located within the Circle Cliffs STSA. This portion of the Circle Cliffs STSA represents the western edge of the west flank of these tar sand deposits. SAI (1982) estimates that the west flank deposit covers about 15,000 acres and contains an estimated 447 million barrels of oil in-place. About 1,700 acres of the ISA occur

within that portion of the deposit considered to be developable. This area would contain an estimated 45 million barrels of oil in-place. The remaining ISA acreage within the STSA is not known to contain minable deposits of tar sand. Development of tar sand in the Circle Cliffs area would depend on several factors. The deposits themselves are not generally considered of a very high quality. Other higher quality deposits exist nearby in the Tar Sand Triangle STSA. About 8,960 acres of the Circle Cliffs STSA contained in the ISA are under lease conversion application and would be mined by in-situ methods. Adequate water for this type of development is lacking. In addition, since the known deposits extend only slightly into the ISA and the topography is extremely rugged and access limited, it is unlikely that development of any tar sand resource would take place in the ISA. If development were to occur, it would be limited to the very eastern-most area of the ISA.

Geothermal

No geothermal resources are known to occur within or near the ISA. According to SAI (1982), the geothermal favorability of the ISA is low (f1) with a certainty of occurrence rating of medium low (c2).

The ISA lies within the Colorado Plateau which, in terms of geothermal resources, is characterized by a low heat flow, a long history of relative tectonic stability, and a general lack of thermal springs. The scarcity of hot springs may be due in part to a lowered regional water table caused by deep stream incision. If thermal waters do exist, they occur only at considerable depth (Muffler, 1978).

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks are known to occur within or near the vicinity of the ISA. The nearest thermal spring is approximately 60 miles to the east in Red Canyon and it discharges at a temperature of only 20 degrees Centigrade (C) (National Oceanic Atmospheric Administration, 1979).

Hydroelectric

According to SAI (1982), the ISA has a favorability only for small-scale hydroelectric developments (1 megawatt). This is due largely to the fact that discharge from the Escalante River can vary greatly from one day to the next depending on the

severity of thunderstorms. Under these conditions only small-scale hydroelectric facilities would be practical. These sites are not unique to the ISA and similar sites may exist along the Escalante River outside the ISA. SAI has assigned the ISA a hydroelectric rating of f2 and a certainty of occurrence rating of c4.

LOCATABLE MINERALS

A check of mining claim records on April 8, 1983 showed there to be 1,100 mining claims (covering approximately 22,000 acres), most of which are probably located for uranium (they could be located for copper since copper is associated with uranium mineralization in this area). These claims are located in the southeastern portion of the ISA in the Greater Circle Cliffs Probable Resource Area. The number of claims is subject to wide fluctuation as new claims can be filed at any time. Also, claims can be declared nonexistent for failure to complete assessment work. Eight hundred and seventy claims were located prior to October 21, 1976 and 230 claims were located after October 21, 1976.

Uranium

Approximately 36,500 acres in the eastern portion of the ISA (31 percent of the ISA) are located within the 1,126-square-mile Greater Circle Cliffs Probable Resource Area which is considered by the U.S. DOE (1983) to have a high certainty (c4) to contain relatively large potential resources of uranium (f4). The remainder of the ISA (83,225 acres) is in the Chinle Formation Favorable Area, an area considered by the U.S. DOE to be favorable for small deposits of uranium (f2/c3).

Possible Resource Areas are defined by the U.S. DOE as those areas where potential resources are estimated to occur in known productive uranium areas either in extensions of known deposits or in undiscovered deposits within geologic trends or areas of mineralization. The U.S. DOE (1983) estimates that there is a 50-percent probability for the Greater Circle Cliffs Probable Resource Area to contain about 3,600 tons of uranium oxide that would be available at a forward cost of \$100/lb. The areal extent of such a deposit is estimated to be about 1,200 acres (based on 0.01-percent minimum grade and a 5-meter average thickness for host rock).

Favorable areas are defined by the U.S. DOE as geographic areas in which the available data indicate the existence of geologic environments favorable for the concentration of uranium. No

estimate was made by the U.S. DOE for possible tonnages in the favorable area. However, the f2 rating assigned to the area indicates that any potential deposit would not be expected to exceed 500 tons of uranium oxide at a forward cost of \$100/lb. The areal extent of such a deposit is estimated to be about 100 acres (based on 0.01-percent minimum grade and a 5-meter average thickness for host rock). It is important to note that the estimation of potential resources and the classification of an area as favorable does not imply the presence of a deposit, but implies only a potential to contain such a deposit.

Any mining operations in the potential resource area or the favorable area would be by underground methods. Surface facilities required for underground mines usually consist of one or more portals and air vents and a leaching mill for ore concentration. Although it is difficult to project the extent of such a hypothetical operation, underground mines in these size deposits typically require about 40 acres for surface facilities. Developmental drilling, especially for detailed delineation of a deposit, could require significantly more surface area than actual mining operation. This would depend largely on the size and complexity of the potential deposit and how much drilling would be involved. A closely spaced drilling program could require anywhere from a few acres for a small deposit with a blanket-type configuration to much more acreage for larger deposits with more complex configurations.

Copper and Associated Minerals

Near the eastern side of the ISA, copper associated with uranium mineralization occurs in the Shinarump Member of the Chinle Formation (Doelling, 1975). According to Doelling (1975), the copper minerals most often associated with the uranium deposits, malachite, azurite, chalcocopyrite, bornite, and chrysocolla, seem to be controlled by the same factors that have deposited the uranium minerals. In many instances the copper minerals are concentrated around distinct uranium mineralization. Copper prospects within the Chinle Formation along the eastern side of the ISA have reported assays of 0.1- to 13.2-percent copper (Doelling, 1975).

Since copper occurrence in the area is intimately associated with uranium mineralization, the potential of the western side of the ISA for economic deposits of copper is similarly low. However, for the same reason, the Chinle Formation in the eastern side of the ISA must be considered as favorable for small economic copper deposits. SAI has made no ratings for copper.

NORTH ESCALANTE CANYONS/THE GULCH ISA

It is possible that for some or all of the claims located along the eastern side of the ISA, location is at least in part for copper.

SALABLE MINERALS

Stream gravel and other loose rock material which could be used for construction occur within the ISA. These deposits are not unique or economically significant due to the presence of similar materials nearby outside the ISA.

Wildlife

The North Escalante Canyons/The Gulch ISA has habitat that theoretically could support approximately 50 species of mammals, 170 species of birds, 17 species of reptiles, 5 species of amphibians, and 6 species of fish. The birds are mainly seasonal residents or migrants while the other species are primarily residents.

Major game species that inhabit or frequent the ISA are mule deer, cottontail, cougar, mourning dove, and waterfowl. Mule deer occur throughout the ISA in limited numbers (fewer than 100 animals) on a yearlong basis. There is an additional influx of deer from Boulder Mountain during the winter. The number of wintering deer is variable, but probably does not exceed 200 deer most winters. Deer are most commonly associated with the pinyon-juniper and riparian habitats.

Elk were transplanted onto Boulder Mountain in 1977 and about 50 to 80 animals now winter in the Boulder and Deer Creek areas. A few of these elk move into the ISA from those areas occasionally during the winter. Elk numbers within the ISA could increase as the herd size increases.

Cougars are present throughout the ISA in small numbers (probably less than 10). A few may be resident, but the majority are winter visitors. Cougars occur in the pinyon-juniper and riparian habitats as well as rocky and cliff areas, usually in close proximity to areas occupied by mule deer.

Chukar were introduced in the Escalante area in 1956. A few birds have been seen along Harris Wash in the southern portion of the ISA.

Two endangered species, peregrine falcon and bald eagle, are rare migrants and possibly winter visitors of the ISA. Bald eagles commonly winter on Lake Powell at the mouth of the Escalante River and may occasionally move up the river into the ISA.

At least seven other raptors are known to nest in the ISA, including the golden eagle, but only the American kestrel could be considered common.

The Utah Division of Wildlife Resources (UDWR, 1982) list of sensitive species includes three species that occur occasionally within the ISA: Lewis woodpecker and western and mountain bluebirds.

No critical habitat has been identified in the ISA. No wildlife habitat plans or wildlife projects have been developed within the ISA and none have been proposed.

Brown and rainbow trout occur in Deer Creek, Boulder Creek, and possibly in the Escalante River near its confluence with Deer Creek. Trout in Deer Creek are restricted to a few deep pools cut in the sandstone bottom.

Forest Resources

No significant forest resources occur in the ISA. Calf Creek Recreation Area (425 acres) is closed to wood cutting. About 118,800 acres are open to the collection of fuelwood; however, due to the remoteness of the area, access, and sparse vegetation, current use is minimal (USDI, BLM, 1979a). Some post cutting and fuelwood cutting by local residents occurs in the New Home Bench area. The type of fuelwood used is pinyon-juniper, and quantity is unknown.

Livestock and Wild Horses/Burros

The ISA encompasses one livestock grazing allotment (cattle) and portions of nine others. Table 4 summarizes allotment information concerning the ISA.

Existing range improvements in the ISA include: nine spring developments, ten reservoirs, 2 miles of pipeline, one stock tank, 3 miles of fence, two corrals, a 1-mile trail, and three cabins. Proposed range improvements include: four spring developments, three reservoirs, 8 miles of pipeline, one stock tank, .5 mile of fence, one well, four catchments, and one retention dam. Proposed range improvements would improve livestock distribution which is a problem in some areas due to lack of water.

There are no wild horses or burros within the ISA.

Visual Resources

The BLM visual resource inventory classified approximately 51,300 acres as Class A, 53,700 acres as Class B, and 14,300 acres as Class C scenery. The VRM classes for this unit are as follows: Class I, 13,400 acres, Class II, 21,650

NORTH ESCALANTE CANYONS/THE GULCH ISA

TABLE 4
Livestock Grazing Use Data

Allotment	Total Acres	Acres in ISA	Suitable Acres in ISA ¹	Unsuitable Acres in ISA ¹	Grazing Preference in ISA (AUMs)	Livestock Permittes Using ISA
Boulder Creek	2,032	2,032	986	1,046	30	1
Haymaker	3,763	2,945	2,729	216	78	2
King Bench	52,333	28,770	21,364	7,406	1,328	1
Deer Creek	18,322	12,079	4,822	7,257	400	2
Steep Creek	12,141	3,406	2,480	926	125	1
Death Hollow	20,443	6,740	3,680	3,060	331	2
Wagon Box Mesa	28,041	4,120	3,381	739	633	2
Big Bowns Bench	18,245	8,400	7,653	747	690	1
Escalante River	79,209	5,254	3,609	1,645	169	1
Upper Cattle	129,391	41,936	31,080	10,856	3,331	8
Unallotted		3,618	—	3,618	—	0
Total		119,300	81,784	37,516	7,115	25

Source: USDI, BLM, 1979a.

¹ The suitability of an area for grazing is determined by a number of factors including steepness of the terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available feed is not allocated for domestic livestock grazing.

acres, Class III 5,600 acres, and Class IV 78,650 acres. (Refer to Appendix 7 for more information regarding BLM's VRM system.) In the Glen Canyon National Recreation Area (NRA) Wilderness Proposal, NPS evaluated several areas common with the ISA and assigned a Value Class of I (highest) to the Escalante River and Harris Wash Canyons. Value Class III (next to lowest) was given to Big Bown Bench and The "V". Approximately 8 percent of the ISA was designated as ONAs in recognition of "unique scenic values and natural wonders." The landscapes of the ISA are derivative of both the Escalante River canyonlands and the Circle Cliffs, and portions of the remaining ISA also contain visual resources with unique scenic values.

Cultural Resources

The ISA contains numerous archaeological sites and the Old Boulder Road which has historical significance. This was the main route between Escalante and Boulder until the Civilian Conservation Corps built the Hell's Backbone Road and Highway 12 in the 1930s.

Based on archaeological surveys for the Southern Utah Coal Project (USDI, BLM, 1978), approximately 48,930 acres in the ISA contain medium

site densities (11 to 49 sites per 23,000 acres), and 55,200 acres contain low site densities (1 to 10 sites per 23,000 acres). Site densities on approximately 15,595 acres are unknown. Twenty-two archaeological sites have been identified in the ISA, including five habitation sites, five campsites, three storage cists, and nine petroglyph/pictographs. It is not known if any of these sites are of National Register quality.

Recreation

Although the ISA offers important opportunities for nonprimitive types of recreation use, most of the use presently occurring within the ISA is probably associated with primitive recreation opportunities. The ISA contains 10,082 acres of four ONAs designated on December 23, 1970 for the purpose of preserving "unique scenic values and natural wonders." The ONAs include North Escalante Canyon (5,800 acres), The Gulch (3,430 acres), Escalante Canyons (840 acres), and Phipps-Death Hollow (12 acres). The ISA includes 109,218 acres of lands contiguous to the ONAs. Within this contiguous area are the Calf Creek Recreation Area (425 acres) and the Wolverine Petrified Wood Natural Environmental Area (2,213 acres). ORV use is closed on 20,358 acres and open on 98,942 acres. Closure areas include all of the ONAs, Calf Creek Recreation Area, and the Wolverine Petrified Wood Natural Environmental Area. Other closure areas include 610 acres in Dry Hollow, 820 acres in Boulder Creek, 240 acres in Wolverine Canyon, 930 acres in Death Hollow, and 5,038 acres in Deer Creek.

On September 11, 1970, the Escalante River from its source to Lake Powell was identified by the Department of the Interior as one of 47 candidate Wild and Scenic Rivers under Section 5(d) of the Wild and Scenic Rivers Act. The ISA contains 11.5 miles of the Escalante River. The BLM must, as part of its environmental protection review process, avoid or mitigate adverse impacts to the river and consult with the NPS before taking any action that could foreclose wild, scenic, or recreational river status (Council on Environmental Quality, 1980).

The ISA is viewed by occupants of approximately 121,000 motor vehicles per year traveling Utah Highway 12 between the communities of Boulder and Escalante. This use is particularly heavy on the Hogsback portion of the route where an overview of the Dry Hollow Canyon and the Boulder Creek confluence is obtained. Sightseeing use is also heavy where Highway 12 overlooks the Escalante River Canyon and upper Phipps Wash. In 1981, occupants of approximately 5,000 motor

vehicles also viewed the ISA along the Long Canyon-Burr Trail Road east of Boulder, Utah. Car campers at Deer Creek Recreation Area probably use Deer Creek in the ISA. Motor vehicle tourists undoubtedly hike into the Wolverine Petrified Wood Area, and it is estimated that approximately 1,700 visitor days of this use occurred in 1981. ORV use of the open ORV areas is minimal. Other uses of the ISA include the collecting of "thunderball" iron concretions along the Big Spencer Flat Road and The "V" Road, both of which have been "cherry-stemmed", and light fishing use of Boulder Creek and Deer Creek.

Primitive recreation use of the ISA was estimated at about 25,500 visitor days in 1981. Based on permit data, 7,650 days of use occurred and it is estimated that only 30 percent of the backcountry users registered. Present primitive recreation use levels seem to be a function of both the national reputation of the area and intrinsic factors such as the large number of hiking route alternatives. Approximately 50 miles of hiking routes associated with the major drainages (Escalante River, Boulder Creek, Deer Creek, The Gulch, Harris Wash, Horse Canyon, Wolverine Canyon, and Death Hollow) are available. Trailheads for these hiking routes are located at the Utah Highway 12 crossing of the Escalante River, Harris Wash, Silver Falls Canyon, and the Burr Trail Road at Deer Creek and The Gulch. The ISA is used by survival groups. For example, it is estimated that 800 days of survival group training use occurred in Wolverine Canyon in 1981.

Wilderness Values

SIZE

The ISA includes approximately 119,300 acres of public land. The ISA is over 20 miles long (north to south) and approximately 20 miles wide (east to west).

NATURALNESS

The naturalness characteristic is defined as an area where the evidences of man are substantially unnoticeable to the average visitor and where individual minor imprints of man exhibit no cumulative impact that is substantially noticeable. The imprints of man which remain within the ISA involve much less than 1 percent of the ISA. They include 5 miles of ways, three cabins, and numerous livestock improvements. Approximately 600 acres show evidence of man's imprints.

In the ISA, the high quality of the naturalness characteristic has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980a) decision. No additional imprints have occurred in the ISA as a result of impairing uses or activities allowed under the BLM's *Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

Approximately 75 percent (89,500 acres) of the ISA offers outstanding opportunities for solitude due to a variety of factors. Deep meandering canyons and other topographic screening situations, canyon vegetation, and benchtop isolation all contribute to the quality of the opportunities.

The 119,300-acre size of this ISA is considered to enhance the outstanding opportunities for solitude present in the ISA. The configuration of the ISA neither enhances nor detracts from the outstanding opportunities present.

The topographic screening in all of the major canyons, named and unnamed, provides an outstanding opportunity for solitude. These canyons vary tremendously in shape and appearance. Some canyons such as the Escalante River, Phipps Wash, and Horse Canyon possess vertical walls and many bends and meanders. Other canyons such as The Gulch, Harris Wash, and upper Deer Creek exhibit more rounded walls with frequent twists and bends. Boulder Creek, Dry Hollow, and lower Deer Creek are deep V-shaped canyons. The confluence area of Boulder and Deer Creeks is one of the most convoluted and dissected sandstone areas in the ISA. Lower Wolverine Canyon and Death Hollow exhibit entrenched meanders and sections of narrows. All of these topographic conditions create superior screening situations. Vegetative screening enhances the opportunity for solitude in the Boulder Creek, Dry Fork, lower Deer Creek, and The Gulch Canyons. Portions of the Escalante River canyon also possess vegetative screening.

The exceptions to the rule that canyons offer outstanding opportunities for solitude are the upper ends of Horse Canyon, Wolverine Canyon, Death Hollow, and Silver Falls Canyon as they emerge from the Circle Cliffs. Here these canyons assume the appearance of broad open valleys between buttes and, consequently, lack topographic screening.

The larger benches in the ISA such as King Bench, Big Bown Bench, Little Bown Bench, Brigham Tea Bench, and Wolverine Bench are

totally isolated by surrounding cliffs or canyons. On the smaller mesas and benches such as Durfey Mesa, Red Breaks, and the mesas east of Big Horn, the geographic isolation is even more pronounced. Most of the larger benches possess rough or dissected interiors that offer excellent topographic screening. Wolverine Bench, Little Bown Bench, the Upper Halfway Hollow section of King Bench, and the eastern end of Big Bown Bench are examples. However, certain areas in the interiors of the three largest benches (Brigham Tea, King, and Big Bown Benches) are open and flat and offer a less than outstanding opportunity for solitude.

There are other landforms within the ISA that cannot be classified as benches or canyons. These areas include The "V" Flat, the dissected sandstone area between the upper Gulch and Deer Creek, the massive sandstone outcroppings northeast of the Red Breaks, and the Chinle exposures at the bottom of the Circle Cliffs. With the exception of The "V" and the Chinle slopes, these areas all possess outstanding opportunities for solitude due to topographic screening. Topographic screening is only present in the slickrock areas of The "V" and in the more dissected and gullied areas at the base of the Circle Cliffs.

Outside sights and sounds are an insignificant influence on solitude at present. It would be easy for a visitor to find seclusion in most of the canyons of the ISA. The user can also easily find seclusion on all but the interiors of the Brigham Tea, King, and Big Bown Benches of the ISA because of the isolating effect of the surrounding cliffs or canyons.

In summary, approximately 89,500 acres or 75 percent of the ISA present outstanding opportunities for solitude. The topographic and vegetative screening enables visitors to find a secluded spot in the majority of the ISA.

PRIMITIVE AND UNCONFINED RECREATION

The ISA provides outstanding opportunities for primitive, unconfined recreation activities such as camping, backpacking, hiking, horseback riding, photography, and sightseeing for geological, historical and archaeological features. In general, the area that exhibits an outstanding opportunity for backpacking determines the extent of this wilderness characteristic in the ISA. The locations where the camping, hiking, horseback riding, photography, and sightseeing for historical and archaeological feature activities are of outstanding quality are all within the backpacking activity area.

The backpacking opportunity in the ISA is unquestionably of outstanding significance. Participant origins, participation levels, the number of public inquiries, and published works all contribute to this conclusion. There are various intrinsic characteristics of the ISA that enhance the backpacking opportunity. The ISA contains a variety of extremely high quality scenic landscapes. The ISA has many water sources and is thus conducive to trips with unlimited overnights. The resultant riparian canyon vegetation is a scenic feature not found in much of the canyon country.

The configuration of the canyon system is a major factor influencing the quality of the backpacking activity. The canyons tributary to the central Escalante River Canyon form a dendritic pattern that offers a variety of routes of ingress and egress to the river. Although the Escalante River and several other canyons are probably the major objectives of current backpacking use, the benches are also intrinsically of destination value. Several benches, such as King Bench, are sufficiently large to provide a backpacking experience of several nights' duration. Benches such as Little Bown and Big Bown offer high quality scenic or solitude experiences for the backpacker. Benches and certain other noncanyon areas also offer travel routes to the Escalante River or between other canyons. Examples include the route across King Bench from The Gulch to Horse Canyon, the route across Big Bown Bench from Horse Canyon to either Silver Falls Canyon or the Escalante River, and the route from Big Spencer Flats to the Escalante River Canyon and Sheffield Bend.

Sightseeing for geological features is of outstanding quality in the Wolverine Petrified Wood Natural Environment Area. This area lacks an outstanding opportunity for backpacking.

The primitive recreation opportunities on 94,200 acres or 79 percent of the ISA meet the outstanding criterion for lands under wilderness review. The ISA has eight recreational opportunities of outstanding quality.

SPECIAL FEATURES

The ISA is a large and geographically complex area associated with that section of the Escalante River canyon between the Glen Canyon NRA and the highway between Boulder and Escalante, Utah. The area has some of the most outstanding scenery in the country. The scenic values are correlated to landforms in the ISA; to understand the quality of this special feature, the topographic character of the ISA should be understood.

NORTH ESCALANTE CANYONS/THE GULCH ISA

East of Horse Canyon in the eastern portion of the ISA, canyons draining to Horse Canyon through the Circle Cliffs escarpment have created a unique canyon and bench system. Four canyons (Horse, Wolverine, Death Hollow, and Silver Falls) have isolated 10 benches of varying size including the named Wolverine, Little Bown, and Big Bown Benches. Wolverine Canyon and Death Hollow possess extremely narrow and convoluted sections, but the most distinctive topographic feature is the surface of the benches. Many of the bench tops exhibit an intricate pattern of innumerable orange-red Kayenta Sandstone knobs. The east face of King Bench also possesses this feature.

In the north-central portion of the ISA, another distinctive area of topographic character is evident. This area is dominated by King Bench, which is the largest bench in the ISA. The much smaller Brigham Tea Bench is also characteristic of the area. The Gulch ONA with its perennial stream is located in the western portion of the area. King Bench is a rough isolated bench wholly within the ISA. For the most part, King Bench and Brigham Tea Bench lack the extensive Navajo or Kayenta Sandstone Formations and exposures characteristic of other sections of the ISA.

The northwestern section is an extremely dissected rugged area. It includes the canyons of the Escalante River, Deer Creek, Dry Hollow, and Boulder Creek. Durffey Mesa is a prominent isolated mesa which, in places, rises 600 feet above Deer Creek and Boulder Creek. With the exception of portions of Haymaker Bench, most of this section is characterized by a yellow-white Navajo Sandstone exposed as cliffs, domes, and canyon walls.

Several distinctive landforms surround Big Spencer Flats in the southwestern portion of the ISA. The Phipps Wash area contains Phipps Wash Canyon draining to the Escalante River and benches with extensive rock outcropping on either side of the canyon.

The Harris Wash area southwest of Big Spencer Flats contains the canyon of Harris Wash and several tributary canyons such as Big Horn, draining Big and Little Spencer Flats. South of Big Spencer Flats, the area changes to a rough sand and slickrock region cut by short canyons. Large sand dunes are present below the small isolated buttes east of Big Horn. Navajo Sandstone domes and peaks are present in this area. Harris Wash is a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

The Red Breaks southeast of Big Spencer Flats is a colorful dissected area in the Carmel Formation. The Red Breaks are bounded on the west by a Navajo Sandstone escarpment. A large canyon draining to Harris Wash bisects the Red Breaks and cuts into the underlying Navajo Sandstone. To the northeast, the Red Breaks are replaced by one of the most extensive Navajo Sandstone areas in the ISA. The Navajo forms massive domes, peaks, and mesas and extends to the rim of the Escalante River canyon. From the mouth of Boulder Creek to The Gulch, several short side canyons enter the river from this sandstone area.

The Navajo Sandstone area and the Red Breaks are bounded on the east by The "V" flat created by the intersection of the Harris Wash and Escalante River Canyons. The "V" lacks relief and is characterized by a patchwork pattern of open sandy soil areas and slickrock. Several sand dune areas are present. In total, approximately 81,000 acres of the ISA possess scenic values of Section 2(c) significance.

The ISA possesses numerous archaeological sites. A historical site of probable Section 2(c) significance is the Old Boulder Road, which was the main route between Escalante and Boulder, Utah.

Land Use Plans and Controls

The ISA lies within the BLM Escalante Planning Unit which is being managed under the land use decisions of the Escalante MFP (USD1, BLM, 1981a). The present principal uses within the ISA are livestock grazing and recreation. The ISA encloses 8,897 acres of State land and 452 acres of Federal surface and State minerals (split estate) within its boundaries. Split estate lands were added as a result of a recent United States District Court decision (*Sierra Club et al. vs. Watt*, 4-19-85). State lands are managed by the State Land Board for the purpose of generating revenues for the public school system.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) makes recommendations for wilderness designation. The Master Plan recognizes that the county possesses "... Some of the most spectacular scenery in the United States . . . The County is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs or ISAs and 31,600 acres in one Forest Service unit be

recommended for wilderness. The plan recommends that 53,447 acres of the North Escalante Canyons/The Gulch ISA be designated wilderness. The county plan recommends that the remaining lands within the county be retained for multiple use. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The position of the Garfield County Commissioners (1982) is that the northern and eastern boundaries should be adjusted. The northern boundary of the ISA is formed by the Burr Trail Road. According to Garfield County, this boundary should be adjusted to allow for future improvements to the transportation route and serve as a utility corridor should the need arise. The eastern boundary of the ISA should be adjusted to allow for uranium exploration and development.

With regard to State land, the Garfield County position (1982) is that the State lands (8,960 acres) should be traded with public lands outside the wilderness area but must remain in the geographical area of Garfield County.

Glen Canyon NRA forms the southern boundary of the ISA. This contiguous area is recommended by NPS for wilderness designation in the Glen Canyon NRA Management Plan (USDI, NPS, 1979).

Socioeconomics

DEMOGRAPHICS

The North Escalante Canyons/The Gulch ISA is located in Garfield County, Utah. Most economic impacts are expected to be restricted to this county. Garfield is a rural county having an average population density of less than one person per square mile. This density is very low when compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in this county (3,673 persons) is concentrated in small communities rather than being evenly distributed throughout the area.

The community of Escalante lies along a major access route to the ISA, Utah Highway 12. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is a main gateway and service area for visitors to the ISA.

EMPLOYMENT

The economy of Garfield County is dominated by the government sector in terms of employment (USDC, Bureau of Economic Analysis, 1982). The

three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (18 percent), and services (13 percent). Personal income is in similar proportions. Table 5 presents employment and personal income data for Garfield County.

TABLE 5
Employment and Personal Income
Garfield County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	2,143	24,792
Proprietors	349	2,637
Farm Proprietors	209	807
Nonfarm Proprietors	140	1,830
By Industry Source	—	—
Farm	27	949
Nonfarm	1,767	23,843
Private	1,332	19,049
Ag. Serv., For., Fish., and Other	(L)	79
Mining	208	4,222
Construction	379	5,536
Manufacturing	247	3,294
Nondurable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	84	1,545
Wholesale Trade	(L)	96
Retail Trade	126	1,302
Finance, Insurance, and Real Estate Services	16	189
Government and Government Enterprises	270	2,786
Government and Government Enterprises	435	4,794
Federal, Civilian	140	1,656
Federal, Military	24	64
State and Local	271	3,074

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals

(L) Less than 10 wage and salary jobs.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the nongovernment employment and income in the area is based in the agriculture and services sectors. This is based upon the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante. Employment in Escalante is dominated by manufacturing and government. The largest employer is Escalante Sawmill, Inc., followed by the local school system, then local, State, and Federal governments combined. These two sectors are also predominant in the personal income of the area (USDC, Bureau of Economic Analysis, 1982).

INCOME AND REVENUES

Economic-related activities in the ISA include mineral exploration, livestock production, and recreation. Table 6 summarizes local income and Federal revenues from the ISA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 6
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$281,400
Mineral Production	0	0
Mining Claims	Less than \$110,000	0
Livestock Grazing	\$142,300	\$9,961
Woodland Products	0	0
Recreational Use	Less than \$104,550	\$450
Total	Less than \$356,550	Up to \$336,186

Sources: BLM Files; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

The ISA has 1,100 mining claims that require assessment work to remain valid. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of the claims are current in assessment.

The geophysical exploration and oil and gas well drilling that has been conducted in the ISA has generated some temporary local employment and income.

No oil and gas or mineral production has occurred in the ISA. Therefore, mineral and energy resource production from the ISA has not significantly contributed to local employment or income.

Twenty-five livestock operators have a total grazing privilege of 7,115 AUMs within the ISA. If all this forage were utilized, it would account for \$142,300 of livestock sales and \$35,575 of ranchers' returns to labor and investment.

Some woodland products have been harvested from the ISA; however, the harvests have been small and are insignificant to the local economy and only of minor significance to those involved in the harvest.

The ISA's primitive recreational use is high. Related local expenditures, however, would be

low due to the spending pattern of the users. The ISA's motorized recreational use is minimal and related local expenditures are also minimal. The actual amount of income generated locally from recreational use in the ISA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for North Escalante Canyons/The Gulch ISA is estimated as about 25,500 visitor days per year. Only a portion of the expenditures for recreational use of the ISA contribute to the local economy of Garfield County.

The ISA generates Federal revenues from recreation, livestock grazing, and mineral leasing.

Oil and gas leases in the ISA cover approximately 93,800 acres. At \$3 per acre, lease rental fees generate up to \$281,400 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the ISA are unknown; however, the permittees in the ISA can use up to 7,115 AUMs per year. Based on a \$1.40 per AUM grazing fee, the ISA can potentially generate \$9,961 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of range-land improvements.

Approximately \$450 in Federal revenues have also been generated annually from recreation use permits that have been issued for areas within the ISA.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines For All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this document.
2. Future users in the ISA would meet requirements for all applicable Federal, State, and local permits.

3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs and ISAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the ISA. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and tar sand exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but would probably be low due to the ISA's rough terrain and low resource potential. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: tar sand (4,100 acres, however, only 180 acres would be disturbed at one time [USDI, BLM, 1984b]); oil and gas, 160 acres; and uranium and copper, 40 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

The impacts of potential tar sand development cannot be fully analyzed in this EIS. For more detail on possible tar sand development in the

Circle Cliffs STSA including 10,260 acres (9 percent) of the North Escalante Canyons/The Gulch ISA, the reader is referred to the BLM Circle Cliffs Tar Sand EIS (BLM, 1984b).

AIR QUALITY

The ISA would continue to be managed by the State of Utah as a PSD Class II area. If tar sand is developed in the Circle Cliffs area, air quality could be reduced up to the PSD Class II limitations; however, the proximity of the ISA to Capitol Reef National Park may result in restriction of tar sand development to meet PSD Class I limitations. Disturbance of 380 acres could result in increases in fugitive dust emissions. The amount of dust emissions, however, would depend upon the lease conversion stipulations dealing with dust control and reclamation.

GEOLOGY

No significant impacts to geology are expected because surface disturbances associated with locatable mineral (i.e., uranium and copper), oil and gas, and tar sand (in-situ) exploration and development activities would probably not exceed 380 acres at any given time and because of reclamation practices. This would not significantly affect geology.

SOILS

It is estimated that up to 380 acres of soil could be disturbed by mineral exploration and development at one time. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis), and that erosion condition would increase one class, soil loss on the 380 acres would increase from 1,026 cubic yards/year to 2,052 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the ISA would increase by approximately 1,026 cubic yards (0.88 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible.

VEGETATION

Two species of sensitive plants are found within or near the ISA. Before authorizing surface-disturbing activities (4,300-acre potential) the BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, the BLM would initiate informal consultation with the Fish and Wildlife Service

(FWS) as required by BLM policy. Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of sensitive plant species would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and existing streams carry a lot of sediment within the ISA, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 1,026 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Escalante Planning Unit.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 32,000 barrels/day tar sand industry in the Circle Cliffs STSA would be 7,526 acre-feet/year (USDI, BLM, 1984b). That portion under lease conversion application covers 8,960 acres (approximately 7.5 percent of the STSA) and could be developed under this alternative. Development of ground water or use of surface water could occur within the ISA to help meet water requirements for tar sand production on the ISA or on adjacent areas. Dewatering of streams and a lowering of the ground water table could occur.

In-situ tar sand injection activities within the ISA and on adjacent areas could impact ground water quality within the ISA.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the ISA. These oil and gas resources could be explored and developed, subject to Category 1, 3, and 4 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected under this alternative.

Tar Sand

An estimated tar sand resource of 14 million barrels of recoverable oil on 8,960 acres of the STSA is under lease conversion application in the North Escalante Canyons/The Gulch ISA. This resource could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that up to 180 acres of surface disturbance at one time (4,100 acres over the life of the project) would occur from tar sand development. The likelihood for production of oil from tar sand is thought to be low on the 8,960 acres within the ISA because the potential for tar sand deposits as an economically recoverable resource is low.

Locatable Minerals

Locatable mineral development could occur within the ISA. The ISA would remain open to mining claim location. The potential deposit of up to 500 tons of uranium on 69 percent of the area and a potential deposit of 3,600 tons of uranium on 31 percent of the area could be developed. Approximately 40 acres could be disturbed due to exploration and development of these locatable mineral resources. However, the likelihood of development in the near future is thought to be minimal because of economic considerations (e.g., transportation, poor market, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the availability of water through the construction of water catchments, reservoirs, and the improvement and maintenance of springs. However, disturbance of an estimated 380 acres, (0.32 percent of the ISA) through mineral and energy development and exploration would disrupt wildlife. Deer, elk, mountain lion, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Peregrine falcon and bald eagles, possible visitors to the area, would avoid the disturbed area. Three sensitive species, Lewis woodpecker and western and mountain blue birds, would also avoid the disturbed areas.

FOREST RESOURCES

Since there are few trees other than scattered pinyon and juniper, none of which are utilized (except by occasional campers or hikers), and since minimal surface-disturbing activities are anticipated, no significant impacts to forestry resources are expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante MFP. The 7,115 AUMs currently allocated in the ISA are controlled by 25 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the ISA, few, if any, changes in livestock management techniques are expected. The proposed developments, as described in the No Action Alternative, Description of the Alternatives section, could be developed and would result in improved livestock distribution.

VISUAL RESOURCES

Under this alternative, visual quality in the ISA would be protected by limitations placed on potential surface-disturbing activities (i.e., the 20,358 acres would remain closed to ORV use, 22,800 acres would be closed to oil and gas leasing, and 13,400 acres would be managed under VRM Class I objectives and 21,650 acres under Class II, requiring that activities not be apparent).

However, under this alternative 380 acres of mineral-related exploration and development are possible at one time. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in VRM Class I and II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the ISA as a whole.

CULTURAL RESOURCES

The archaeological resources in the ISA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of a maximum 4,300 acres by mineral exploration and development under this alternative could affect potential National Register sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would

increase in proportion to the general population increase.

RECREATION

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative mineral-related exploration and development are possible on 4,300 acres (only 380 would be disturbed at one time). If roads, vehicular ways, and drill pads are located throughout the ISA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation.

The future trends in recreational use of the ISA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 25,500 current visitor days per year to 38,000 visitor days at the end of 20 years. Overflow from Capitol Reef National Park and Glen Canyon NRA could further increase use. In addition, if tar sand development occurs and the Burr Trail Road is paved, improved access would increase recreational use of these areas. Five miles of way would be left open to ORV use although they are not presently used for ORV travel.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante MFP. Under this alternative, some of the ISA's wilderness characteristics would be protected by limitations placed on potential surface-disturbing activities (i.e., 20,358 acres would remain closed to ORV use, 22,800 acres would be closed to oil and gas leasing, and 13,400 acres would be managed under VRM Class I and Class II objectives requiring that activities not be apparent).

None of the area would be designated wilderness, and management would be under the existing Escalante MFP. Under this alternative, 4,300 acres of mineral exploration and development are possible (only 380 acres would be disturbed at one time). The related surface disturbance would result in a significant loss of naturalness, solitude, and outstanding opportunities for primitive, unconfined recreation throughout the ISA as a

whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for mineral development and related disturbance is low in this ISA.

LAND USE PLANS AND CONTROLS

This alternative would be partially inconsistent with the *Garfield County Master Plan* which recommends a portion of the unit be designated wilderness (53,447 acres). However, it would be consistent with county plans for improvement of the Burr Trail Road and to provide a transportation corridor through the region. It would not complement the NPS proposal of wilderness designation for the adjacent Glen Canyon NRA because the ISA would not be recommended as wilderness. This alternative is based on implementation of the current BLM Escalante MFP and is, therefore, in conformance with it. The No Action Alternative would be consistent with State of Utah plans and policies which emphasize economic return.

SOCIOECONOMICS

Under this alternative, no changes are expected in existing patterns and trends of population, employment, and local income distributions unless tar sand in the Circle Cliffs STSA is developed. Economic development of resources in the ISA would not be affected. There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the tar sands, uranium, and oil and gas in the ISA were developed, it would lead to a significant increase in employment and income for Garfield County. However, the probability of economic development of minerals within the ISA is low in the near future (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (7,115 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotments would continue to produce \$143,300 annually in livestock sales including \$35,575 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent

per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase to 38,000 visitor days in the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day (only a small portion of which contributes to the local economy), recreation-related expenditures attributable to the ISA would likely not be significant to the local economy.

Surface-impacting activities that would be allowed without designation could reduce the demand for commercial outfitter services now offered in the area. However, improved access may generate more recreational use.

Federal and State revenues would not be reduced by this alternative. There are 2,700 acres in the ISA open to oil and gas leases that are currently not leased. If leased, they would bring up to \$8,100 additional Federal lease fee revenues per year in addition to new royalties from lease production. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$9,961 per year) would continue.

All Wilderness Alternative (119,300 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 119,300-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 5 miles of existing vehicular ways in the ISA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The ISA would be managed under VRM Class I.

For the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the ISA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities and that tar sand conversion areas would either be converted with wilderness nonimpairment standards or denied. Oil and gas leasing would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed. (Appendix 10 lists surface disturbance assumptions and estimates for the ISA.)

Because potentially disturbed areas for this alternative would be smaller than under the No Action

Alternative (40 vs. 380 acres at one time or 4,300 total), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, forest, and cultural resources under the All Wilderness Alternative would be insignificant as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could not occur unless they could be developed in a manner not impairing to wilderness values. The proposed three reservoirs, 8 miles of pipeline, one stock tank, one well, and one retention dam might not be developed. Four spring developments and four water catchments could possibly meet wilderness protection criteria.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and would not significantly impact ground water.

In-situ tar sand development in areas adjacent to the ISA could, over time, lower the flows in the Escalante River and lower the quality of the ground water in this ISA. However, under this alternative, water quantity and quality would not be decreased as rapidly in the ISA.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 93,800 acres are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the ISA.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas, with 3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable, could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is con-

cluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Tar Sand

The eastern side of the ISA has potential for tar sand deposits. Approximately 10,260 acres of the ISA are part of the Circle Cliffs STSA and 8,960 acres are under lease conversion application. It is unlikely that the lease could be developed considering the wilderness protection stipulations.

It is concluded that the potential for development of 10,260 acres of tar sand (14 million barrels of recoverable oil) would be foregone. However, the likelihood for development is thought to be low in the near future.

Locatable Minerals

Approximately 22,000 acres are under mining claim within the ISA, principally for uranium. Up to 500 tons of uranium in 69 percent of the ISA and up to 3,600 tons of uranium oxide in 31 percent of the ISA that are recoverable could occur within the ISA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 40 acres could be disturbed due to exploration and development of the locatable mineral resources. The worst-case impact to minerals would occur if the potentially recoverable minerals are not within valid mining claims filed prior to designation. In that case the potential for recovery of up to 4,100 tons of uranium oxide would be foregone. Because production of these metals is not currently occurring and because economic considerations (e.g., transportation, low potential, poor markets, etc.) are unfavorable, it is unlikely that exploration or development will occur in the near future. Therefore, this alternative would not result in any significant loss of recoverable uranium resources in the near future.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. If future water improvements were curtailed, potential habitat for deer and nongame species would be reduced. However, disturbance due to exploration of locatable mineral resources could disrupt wildlife populations and result in these species leaving the disturbed area.

The occasional presence of peregrine falcon, bald eagle, Lewis woodpecker, and western and mountain bluebirds would remain the same in

much of the ISA, except in the 40 acres of mineral disturbance where these species would leave or avoid the area.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante MFP. The 7,115 AUMs currently allocated in the ISA are controlled by 25 livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. In the case of the proposed three reservoirs, four spring developments, four water catchments, 8 miles of pipeline, one stock tank, one well, .5 mile of fence, and one retention dam, which of these would be allowed, if any, is unknown since each would be considered on a case-by-case basis. It is assumed that the four spring developments, .5 mile of fence, and four water catchments could probably be built to meet wilderness protection criteria. Some livestock distribution problems would remain.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I which generally allows for only natural ecological change, through closure of the entire area to ORV use, and through closure of the area to future mineral leasing and location.

Under this alternative possible mineral-related surface disturbance would be reduced from 4,300 acres (380 acres at one time) to 40 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be

denied, VRM Class I objectives may not be met on large portions of the ISA. Because the potential for development of mining claims is low in the near future, visual quality would not be significantly impacted.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the ISA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Primitive recreation use is currently about 25,500 visitor days a year. The ISA has outstanding primitive recreational values. If the ISA is designated wilderness, those high quality recreational opportunities would be further recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the ISA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the ISA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Because management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, the quality of the primitive recreation experience would probably not be negatively affected by the increased use.

Mineral-related surface disturbance on up to 40 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 5 miles of ways within the ISA would be closed to ORV use.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values.

WILDERNESS VALUES

Designation and management of all 119,300 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude. Solitude would be preserved on approximately 89,500 acres that meet and 29,800 acres that do not meet the standards for outstanding solitude. Naturalness would be preserved on all 119,300 acres and primitive and unconfined recreation would be preserved on 94,200 acres that meet and 25,100 acres that do not meet the standards for outstanding opportunities. The scenic and historic special features in this ISA would also be protected and preserved.

No development of oil and gas leases is foreseen under this alternative. The anticipated mineral-related surface disturbance would, therefore, be reduced from 4,300 acres (320 acres at one time) to 40 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of solitude and naturalness.

Outstanding opportunities for eight recreational activities (backpacking, camping, horseback riding, hiking, photography, and archaeological, geological, and historical sightseeing) would be preserved. The ISA's topography funnels visitors into the same areas and could negatively affect solitude and primitive recreational values. However, due to the size of the ISA, this should not be a problem with proper management.

Designation of this ISA as wilderness could benefit the values and uses of the contiguous NPS wilderness proposal. These areas share a common watershed, canyon system, extended recreation travel trails (hiking and horseback riding), and archaeological values.

It is concluded that wilderness designation and management of all 19,300 acres of the North Escalante Canyons/The Gulch ISA would protect and preserve the area's wilderness values, except in localized areas affected by the surface disturbance related to mineral exploration. In the area as a whole, however, no significant loss of wilderness values would be expected.

LAND USE PLANS AND CONTROLS

The existing BLM Escalante MFP does not provide for wilderness designation. Congressional

designation of the ISA as wilderness would be an amendment to the Escalante MFP. This alternative would complement the NPS wilderness proposal in Glen Canyon NRA.

The *Garfield County Master Plan* recommends a portion of the ISA be designated wilderness, but not all of it. Therefore, this alternative would partially conflict with this master plan. Depending on the final location and realignment of the Burr Trail Road, there could be conflicts between road construction and protection of wilderness values. Protection of wilderness values could prevent the proposed realignment of the Burr Trail Road or location of transportation corridors in the region. If State lands within the ISA are exchanged for lands outside the ISA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there would be losses in local income and Federal revenues currently provided by resource uses in the ISA (refer to Table 7) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the ISA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost and mineral leasing revenue that is directed back to local governments would be lost.

Livestock use and ranchers' income would continue as at present with \$142,300 of livestock sales and \$35,575 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income.

Increased public awareness of the area resulting from designation could increase nonmotorized

NORTH ESCALANTE CANYONS/THE GULCH ISA

recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 93,800 acres now leased would cause an eventual loss of up to \$281,400 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$8,000 annually in Federal revenues from the 2,700 acres that could be leased without designation.

Partial Wilderness Alternative (100,300 Acres)

The major activities that would occur in the designated portion of the ISA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 100,300-acre area designated as wilderness and the 19,000-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that in the designated area some of the existing mining claims would eventually be explored and developed, causing an estimated 10 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and that tar sand conversion areas would be either converted with the nonimpairment standards or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed.

It is assumed that within the nondesignated area 30 acres would be disturbed for uranium exploration and development, 30 acres for oil and gas, and 3,500 acres for tar sand (175 acres at one time). Overall, 245 acres of surface disturbance would occur at one time within the ISA, 155 acres less than under the No Action Alternative and 115 acres more than the All Wilderness Alternative. (Appendix 10 lists surface disturbance assumptions and estimates for the ISA.)

The analysis of the No Action Alternative, based on 380 acres of surface disturbance and development of the Circle Cliffs STSA within and adjacent to the ISA, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, forest, and cultural resources. Therefore, these resources would not be significantly affected by this Partial Wilderness

Alternative which assumes 245 acres of surface disturbance and recovery of tar sand from the Circle Cliffs STSA.

Restrictions on management and development methods within the ISA would result in essentially the same impacts on development of water sources, mineral and energy resources, wildlife, livestock grazing, and land use plans as described for the All Wilderness Alternative. The impacts on water quality and quantity would be the same as the No Action Alternative. The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 78,834 acres of oil and gas leases in the area that would be designated wilderness. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 2.5 million barrels of oil and 15 billion cubic feet of natural gas could be foregone. This would allow recovery of .5 million more barrels of oil and 3 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Tar Sand

Approximately 1,400 acres of the Circle Cliffs STSA fall within the portion of the ISA that would be designated wilderness. This acreage is presently under lease conversion application. It is assumed that conversion applications would

either be approved with wilderness nonimpairment stipulations or denied and that future leasing would not be allowed.

The potential for development of 1,400 acres of tar sand with an estimated 1.9 million barrels of recoverable oil would be foregone as it would under the All Wilderness Alternative. In the non-designated area 12.1 million barrels of oil could be developed. However, the potential for this resource is low and the likelihood for production in the near future is small.

Locatable Minerals

Approximately 2,700 acres of mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable uranium in the ISA falls within the area that would be designated as wilderness under this alternative. Information indicates that nearly all of the 3,600 tons of uranium (f4/c4 area) are in the nondesignated portion of the ISA and that the 500 tons of uranium (f2/c3 area) are evenly distributed in the ISA. Assuming that the locatable minerals are evenly distributed in the designated portion of the ISA and that the mineral deposits were not included in mining claims filed before designation, the potential for recovery of 420 tons of uranium would be foregone. This alternative, however, would allow for recovery of 3,680 tons of uranium in the nondesignated area.

Because these metals are not being recovered at present within the ISA and because the best potential uranium area is outside the designated wilderness area, this alternative would not prevent recovery of significant amounts of uranium.

WILDLIFE

Under this alternative some wildlife could benefit due to the preservation of solitude. However, wildlife could be affected by a reduced potential to increase availability of water through the construction of water catchments, reservoirs, and the improvement and maintenance of springs on 84 percent of the ISA. The effects would be essentially the same as under the All Wilderness Alternative. The disturbance of an estimated 245 acres, (0.2 percent of the ISA) through mineral and energy development and exploration would dis-

rupt wildlife on the disturbed areas. Deer, elk, mountain lion, and mobile nongame animals would be dispersed from the disturbed areas for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Peregrine falcon and bald eagle, possible visitors to the area, would also avoid the disturbed area. Three sensitive species, Lewis woodpecker and western and mountain blue birds, would also avoid the disturbed areas.

LIVESTOCK

The effect of designation of 100,300 acres of the ISA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 7,115 AUMs allocated, 5,957 would be within the designated portion of the ISA and 1,158 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 5,957 AUMs in the designated portion could be restricted to preserve wilderness values. Within the designated portion of the ISA there are one catchment, one retention dam, one stock tank, one well, and 8 miles of pipeline proposed. Which, if any, of these would be allowed would be determined on a case-by-case basis. It is assumed that only the catchment could be built within the wilderness protection criteria. They would have to be constructed in a manner nonimpairing to wilderness values. In the nondesignated area the proposed four spring developments, three reservoirs, three catchments, and .5 mile of fence could be constructed and would allow for improved livestock distribution.

VISUAL RESOURCES

Because total surface disturbance in the ISA would be 245 acres at one time under this alternative as opposed to 380 acres under No Action and 40 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and slightly more than under the All Wilderness Alternative. In the portion recommended for designation, 10 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 235 acres in the nondesignated portion of the ISA would be disturbed and would not meet VRM Class II objectives. Disturbance of a total of 245 acres within the ISA would result in localized long-term impairment of visual values but would probably not significantly affect visual resources

in the ISA as a whole. However, if roads, drill pads, etc., were scattered throughout the ISA, visual resource impacts would be significantly greater.

RECREATION

Impacts on recreational values and opportunities for the 100,300-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 4 miles of ways within the ISA would be closed to ORV use.

In the area that would not be designated (19,000 acres), little change in recreational use is expected.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 100,300 acres that would be designated wilderness. Size, naturalness (all 100,300 acres affected are natural), outstanding opportunities for solitude (72,000 acres meet the standard and 28,300 acres do not meet the standard) and primitive recreation (including 77,900 acres that meet and 22,400 acres that do not meet the standards), and special features would be preserved. The ISA's topography funnels visitors into the same areas and could result in a negative effect on solitude and primitive recreation values. However, due to the size of the ISA this would not be a problem with proper management. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 10 acres in the designated wilderness area. Additionally, sights, sounds, and emissions of activities within and adjacent to the 19,000-acre area that would not be designated could result in loss of solitude and primitive recreational values within the designated portion.

In the 19,000-acre area that would not be designated, there would be 235 acres of disturbance from mineral and energy exploration and development activities. Those activities would degrade wilderness values (naturalness, special features, opportunities for solitude [outstanding on 17,500 acres], and primitive recreation [outstanding on 16,300 acres]) from the commencement of activities through rehabilitation. Thus, there would be long-term impairment of wilderness values in the portion that would not be designated. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

The portion that would not be designated would be contiguous with the proposed wilderness in the Glen Canyon NRA.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative with the exception of its relationship to Glen Canyon NRA. Part of the nondesignated area would be adjacent to NPS-proposed wilderness areas and, therefore, would not entirely complement their management proposal. However, this alternative would be consistent with Garfield County's plans by allowing a .25-mile boundary set back from the Burr Trail Road.

SOCIOECONOMICS

Partial designation of this ISA is not expected to result in any changes in existing patterns and trends of population, employment, and local income distributions. The 7,115 AUMs would remain available to cattle in the ten allotments and would continue to generate \$9,961 in grazing fees to the Federal government, \$142,300 in sales, and \$35,575 in ranchers' returns. Approximately \$236,500 per year in Federal oil and gas leasing revenues, \$44,900 less than with the All Wilderness Alternative, would be lost as leases were phased out. This revenue would not be transferred to State programs; however, none of this money normally flows back to the local economy. Overall, the local economic impact from this alternative would be considered insignificant as would economic impacts from the No Action and All Wilderness Alternatives.

Partial Wilderness Alternative (54,500 Acres)

The major activities that would occur in the designated portion of the ISA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 54,500-acre area designated as wilderness and the 64,800-acre nondesignated area are discussed in the Description of the Alternatives section.

There are no mining claims presently in the designated area. However, it is assumed that claims would be located before wilderness designation and eventually be explored and developed, causing an estimated 10 acres of disturbance. It is also assumed that existing oil and gas leases in

the designated portion would expire before production of commercial quantities. All tar sand deposits are outside the designated area. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed.

It is assumed that, within the nondesignated area, 4,200 acres (280 acres would be disturbed at one time) would be disturbed sometime in the future due to mineral, oil and gas, and tar sand exploration and development. Overall, 4,210 acres of surface disturbance would occur within the ISA; 90 acres less than under the No Action Alternative, 4,170 acres more than with the All Wilderness Alternative, and 640 acres more than the Partial Wilderness Alternative of designating 100,300 acres. (Appendix 10 lists the surface disturbance assumptions and estimates for the ISA.)

The analysis of the No Action Alternative, based on 4,300 acres of surface disturbance (380 acres at one time) and development of the Circle Cliffs STSA within and adjacent to the ISA, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, forest, and cultural resources. Therefore, these resources would not be significantly affected by this Partial Wilderness Alternative, which is based on 4,210 acres of surface disturbance (280 acres at one time) and recovery of tar sand from the Circle Cliffs STSA within and adjacent to the ISA.

Restrictions on management and development methods within the ISA would result in essentially the same impacts on development of water sources, mineral and energy resources, wildlife, livestock, visual resources, cultural resources, recreation, wilderness values, and socioeconomics, as described for the No Action Alternative. The impacts of designating 54,500 acres of wilderness in the ISA would generally be of the same nature as those resulting from not designating the area as wilderness because the 54,500-acre area has little potential for mineral development and the Escalante MFP decision protects the area's wilderness values. However, this alternative would provide additional protection on 32,000 acres that are open to oil and gas leasing under Category 1 and 3 stipulations and the 43,100 acres open to ORV use.

MINERAL AND ENERGY RESOURCES

Locatable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new

leasing. There are approximately 30,160 acres of oil and gas leases in this area. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. It is assumed that the loss of potential resource recovery would be in direct proportion to the size of the area designated. Using this assumption, exploration and development of a potential resource of up to 1 million barrels of oil and 8 billion cubic feet of natural gas could be foregone. This would allow recovery of 2 million more barrels of oil and 10 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Tar Sand

There are no tar sand resources within the 54,500-acre designated area. Therefore, impacts due to tar sand development would be the same as the No Action Alternative.

Locatable Minerals

There are no mining claims within the designated portion of the ISA. The ISA's f4/c4 area (the area with the highest potential for uranium development) is in the nondesignated area. If claims are located prior to designation, they could be developed under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b) in the designated area.

It cannot be determined how much of the potentially recoverable 500 tons of uranium (f2/c3 area) in the ISA falls within the area that would be designated as wilderness under this alternative. Assuming that locatable minerals are evenly distributed in the ISA and that mineral deposits are not included in mining claims filed before designation, the potential for recovery of up to 500 tons of uranium would be foregone. The 3,600 tons of uranium oxide in the Greater Circle Cliffs Probable Resource Area could be explored and developed because it is within the nondesignated area.

NORTH ESCALANTE CANYONS/THE GULCH ISA

Because these metals are not being recovered at present within the ISA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur in the near future. Therefore, this alternative would not prevent recovery of significant amounts of uranium.

WILDLIFE

Under this alternative some wildlife could benefit from preservation of solitude on 46 percent of the ISA. However, wildlife could be affected by an increase in the availability of water through the construction of water catchments, reservoirs, and the improvement and maintenance of springs on 54 percent of the ISA. Disturbance of an estimated 245 acres (0.2 percent of the ISA) through mineral and energy development and exploration would disrupt wildlife on the disturbed areas. Deer, elk, mountain lion, and mobile nongame animals would be dispersed from the disturbed areas for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Peregrine falcon and bald eagle, possible visitors to the area, would also avoid the disturbed area. Three sensitive species, Lewis woodpecker and western and mountain blue birds, would also avoid the disturbed areas.

LIVESTOCK

The effects of designation of 54,500 acres of the ISA as wilderness on domestic livestock grazing would be essentially the same as with the No Action Alternative. Of the 7,115 AUMs allocated, 1,948 would be within the designated portion of the ISA and 5,167 within the nondesignated portion. Development of future roads or other livestock management facilities for use with the 1,948 AUMs in the designated portion would be restricted to preserve wilderness values. Because only two springs, one well, one water catchment, and one retention dam have been proposed in the designated portion and the springs and water catchment would probably be allowed, and because motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected. Most of the livestock distribution problems could be alleviated.

VISUAL RESOURCES

Because total surface disturbance in the ISA would be 4,210 acres under this alternative, as opposed to 4,300 acres under the No Action Alternative and 40 acres under the All Wilderness Alternative, the impact on visual resources would

be slightly less than under the No Action and much more than under the All Wilderness. In the portion recommended for designation, 10 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and would exceed VRM Class I management objectives. An additional 4,200 acres in the nondesignated portion of the ISA would be disturbed and would not meet VRM Class I or II objectives. On 51,520 acres, now managed under Class IV objectives that could be disturbed by mineral development, long-term impairment of visual values could result. Disturbance of a total of 4,210 acres within the ISA would result in localized long-term impairment of visual values and would significantly affect visual resources. Nearly all disturbance would be in the Circle Cliffs STSA.

RECREATION

Impacts on recreational values and opportunities for the 54,500-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the lack of such activity in the area. No ways or "cherry-stemmed" roads exist in the designated area.

In the area that would not be designated (64,800 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 54,500 acres that would be designated wilderness. Designation and management of 54,500 acres of the ISA as wilderness would ensure the preservation of the wilderness values of size, naturalness (all 54,500 acres appear natural), solitude (including 54,500 acres that meet the standard), and outstanding opportunities for primitive and unconfined recreation (including 54,500 acres that meet the standard). Recreational use could increase as described in the All Wilderness Alternative. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 10 acres if claims are located prior to designation. Additionally, sights, sounds, and emissions of activities within and adjacent to the 64,800-acre area that would not be designated could result in loss of solitude and primitive recreational values.

In the 64,800-acre area that would not be designated, there would be only 280 acres of disturbance at one time (4,200 acres total) from mineral

and energy exploration and development activities. Those activities would degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation) from the commencement of activities through rehabilitation. Thus, long-term impairment of wilderness values in the portion that would not be designated could be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative, with the exception of its relationship to Glen Canyon NRA and *Garfield County Master Plan*. Conflicts with improvement of the Burr Trail Road would be avoided. This alternative would not complement the NPS proposal, because the nondesignated portion would be contiguous with a NPS-proposed wilderness

area. The alternative, however, would be consistent with the *Garfield County Master Plan*, which recommends the area for wilderness designation.

SOCIOECONOMICS

Partial designation of this ISA is not expected to result in any changes in existing patterns or trends in population, employment, and local income distributions. The 7,115 AUMs would remain available to cattle in the ten allotments and would generate \$9,961 in revenue. Sales (\$142,300) associated with livestock grazing would continue as well as the \$35,575 in returns to ranchers. Approximately \$90,481 per year in Federal oil and gas leasing revenue would be lost as leases were phased out. This revenue would not be generated for State programs and, because most of this money normally does not flow back to the local economy, there would be little impact to local communities. Overall, the local economic impact from this alternative would be considered insignificant as would economic impacts from the No Action and All Wilderness Alternatives.

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Carcass Canyon WSA



CARCASS CANYON WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	2
Alternatives Considered and Eliminated from Detailed Study	2
Alternatives Analyzed	2
No Action Alternative (Proposed Action)	2
All Wilderness Alternative	4
Summary of Environmental Consequences	6
AFFECTED ENVIRONMENT	6
Air Quality	6
Geology	6
Soils	9
Vegetation	9
Water Resources	10
Mineral and Energy Resources	10
Wildlife	13
Forest Resources	13
Livestock and Wild Horses/Burros	13
Visual Resources	14
Cultural Resources	14
Recreation	14
Wilderness Values	15
Land Use Plans and Controls	16
Socioeconomics	17
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	18
Analysis Assumptions and Guidelines for All Alternatives	18
No Action Alternative (Proposed Action)	19
All Wilderness Alternative	22
BIBLIOGRAPHY	27

CARCASS CANYON WSA

(UT-040-076)

General Description of the Area

The Carcass Canyon Wilderness Study Area (WSA) is located in Garfield and Kane Counties approximately 2 miles south of the Town of Escalante, Utah. The WSA contains 46,711 acres of BLM-administered land of which 30,748 acres (66 percent) are located in Garfield County and 15,963 acres (34 percent) are in Kane County. It is administered by the Escalante Resource Area of the Cedar City District. The WSA encloses 1,920 acres of State land, plus 640 acres of State minerals and Federal surface (split estate). The WSA is characterized by pinyon-juniper vegetation, rugged rimrock topography, and the Straight Cliffs escarpment.

In general, the climate is temperate and arid with annual precipitation averaging about 10 inches. From June through early September, convection thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates occur primarily from November through March.

Summer temperatures in Escalante, Utah range approximately 30 degrees Fahrenheit (F) with highs in the upper 80s and lows in the 50s. Winters in Escalante, Utah have a temperature range of about 27 degrees F with highs in the low 40s and lows of about 15 degrees F. Snowfall in Escalante averages 28 inches and begins in October or November and ends in March and April.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I. The major issues of the Carcass Canyon WSA are the potential for coal and uranium development within the unit. Issues and concerns specific to Carcass Canyon WSA raised in the spring of 1984 public scoping meetings (USDI, BLM, 1984) are responded to below.

1. *Comment:* The Glen Canyon National Recreation Area (NRA) 1972 Enabling Act (Lloyd Act) directed a study of proposed road alignment within and adjacent to the recreation area. If a road is constructed, it could impact this WSA.

Response: The studies by the National Park Service (NPS) for a road from Glen Canyon City to Bullfrog do not involve this WSA.

2. *Comment:* The oil and gas (mineral) potential of the WSA is ranked moderate to high by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be high. This information should be considered in the Draft Environmental Impact Statement (EIS).

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

3. *Comment:* Apparently there were irrational deletions of all or parts of the WSAs and Instant Study Areas (ISAs). After review of Site-Specific Analysis (SSA) summaries in the scoping document, it becomes apparent that many areas have no resource conflicts and excellent wilderness qualities, yet no acres were recommended for wilderness.

Response: During EIS scoping, BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information



received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

During scoping a general suggestion was received for a partial alternative that would avoid resource conflicts. It was not possible for BLM to formulate such an alternative since the entire WSA contains mineral resources; therefore, the concept of a partial alternative was eliminated from detailed study.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (46,711 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE (PROPOSED ACTION)

Under this alternative, none of the 46,711-acre Carcass Canyon WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Escalante Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981a). The 1,920 acres of State land and 640 acres of State minerals (split estate only) within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase.

The following are specific actions that would take place under this alternative:

- All 46,711 acres would remain open to mineral location and sale. Development work, extraction, and patenting would be

allowed on 133 existing mining claims (1,900 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809), without consideration for wilderness values. Existing oil and gas leases (54 leases totaling 41,844 acres) could be developed under Category 1 (standard stipulations) without concern for wilderness values. The balance of the WSA (4,867 acres) could be offered for new oil and gas leases under Category 1. Existing coal leases (eight leases covering 16,970 acres) and future new coal leases could be developed without wilderness considerations. If all coal leasing factors are met, one existing Preference Right Lease Application (PRLA) on 35 acres in the WSA could be approved and the lease issued without wilderness considerations.

- Domestic livestock grazing use of the WSA would continue as authorized in the MFP (currently 196 Animal Unit Months [AUMs]). Existing developments for livestock, including two spring developments, one corral, and 2.5 miles of fence identified in the management plans would continue to be maintained. The proposed range improvements (three reservoirs and 2,400 acres of seeding) in the MFP would be allowed.
- Use, maintenance, and development of facilities and improvements for wildlife, water resources, etc. could be allowed if in conformance with the MFP. None are currently planned.
- The entire WSA acreage would continue to be open to off-road vehicle (ORV) use.
- The entire 46,711-acre area would be open to woodland product harvest. There is some noncommercial harvest of forest products (fuelwood and posts) at the present time.
- The entire area would continue to be managed under Visual Resource Management (VRM) Class IV.
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit

provided they are carried on in an environmentally sound manner.

- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 46,711 acres of the Carcass Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of three sections of State land (1,920 acres) plus 640 acres minerals split estate within the WSA (refer to Map 1) would be likely and could be authorized by purchase or exchange. Eight of eleven State sections (or parts thereof) adjacent to the WSA would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. No private lands are located in the WSA.

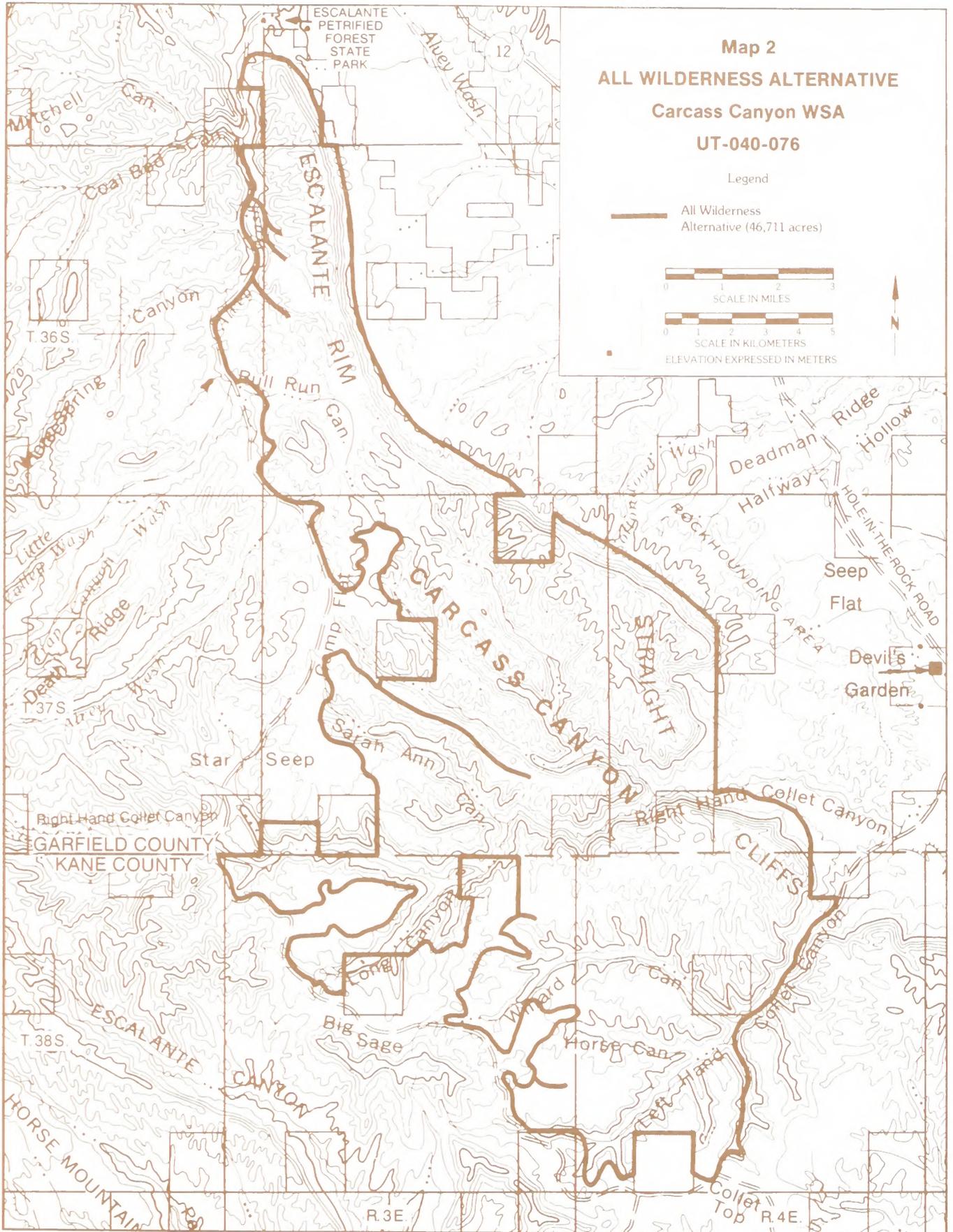
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 46,711 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting of 133 existing mining claims would be allowed where they are determined to be valid. Development of any valid existing claims would be regulated by unnecessary or undue degradation guidelines, with concern for wilderness values. Existing oil and gas leases involving about 41,844 acres would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown. No new oil and gas leases would be issued. It is assumed that existing coal leases (seven pre-FLPMA [Federal Land Policy and Management Act] leases on 10,405 acres) would be terminated if diligent develop-

ment criteria are not met, and they would not be extended or re-issued. Those leases meeting the diligence criteria would be allowed to continue production. One post-FLPMA lease on 6,565 acres would be terminated. No new coal leases would be issued on the 29,741 acres currently not leased, including the existing PRLA that would not be approved on 35 acres.

- Present domestic livestock grazing would continue as authorized in the Escalante MFP. The 196 AUMs in the WSA would remain available to livestock as presently allotted. After designation, existing range facilities (as listed in the No Action Alternative) could be maintained in a manner least degrading to wilderness values. New rangeland developments would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources, provided that wilderness protection criteria are met. It is assumed that the proposed three reservoirs and 2,400-acre seeding would not be allowed.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Carcass Canyon WSA, and none are planned.
- Wildlife transplants or developments would be allowed after designation only if compatible with wilderness values. Currently, there are no wildlife developments in the WSA and none are planned.
- The entire 46,711-acre area would be closed to ORV use except for (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 5 miles of existing ways would be closed. Existing roads would be "cherry-stemmed" in the following six locations: Alvey Wash, 1.5 miles; Alvey Wash, (second location) 1 mile; Carcass Canyon, 1 mile; southeast

CARCASS CANYON WSA



from Camp Flat, 3 miles; on the mesa east of Long Canyon, ½ mile; and on the mesa south of Horse Canyon, 1 mile. The 8 miles of “cherry-stemmed” roads and about 19 additional miles of dirt roads that border the WSA would remain open to vehicular use.

- A specific Wilderness Management Plan would be developed to govern use and protection of the 46,711-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or “cherry-stemmed” into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is some non-commercial harvest of forest products at the present time.
- Visual resources in the WSA would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter or disturb the landscape). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.

- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The Carcass Canyon WSA and surrounding area have been designated Class II under the Prevention of Significant Deterioration (PSD) regulations. No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit; however, data collected from various sites (Page, Arizona and Four Mile Bench, Utah) indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations.

Good visibility adds to the quality of the vistas, both within and from the WSA.

The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the Utah State government, not of the BLM (USDI, BLM, 1982b). Visibility within the WSA is excellent.

Geology

The Carcass Canyon WSA lies within the Canyonlands section of the Colorado Plateau Physiographic Province (Thornbury, 1965). The

CARCASS CANYON WSA

**TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
CARCASS CANYON WSA**

Resource	Alternatives	
	No Action (Proposed Action)	All Wilderness (46,711 Acres)
Geology	Underground coal mining of coal on 91 percent of the WSA could result in subsidence and fracturing of geologic formations.	Underground coal mining would not be allowed.
Water Resources	The quality and flow of ground water in the WSA could be reduced by underground coal mining.	Underground coal mining would not be allowed.
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 500 tons of uranium oxide. Approximately 200 million tons of coal could be recovered.	Oil, gas and coal likely would not be recovered. Assuming a worst-case analysis, the recovery of uranium would also be foregone. Due to the low likelihood of recovery of oil, gas and uranium, the loss of development opportunity would not be significant. Loss of coal development could be significant in the long term.
Wildlife	About 5 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. Some wildlife would benefit from construction of three reservoirs and seeding of 2,400 acres.	Wildlife would benefit from solitude, but would not benefit from an increase in the number of water sources and the land treatment.
Livestock	Grazing of 196 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of three reservoirs and 2,400 acres of seeding, could be constructed and would produce about 380 AUMs of forage and improve livestock distribution.	Grazing of 196 AUMs and maintenance of existing developments would continue. Developments proposed in the future might not be allowed. The proposed seeding and reservoirs would not be developed and the potential for 380 AUMs of additional forage would be lost.
Visual Resources	The quality of visual resources could be impaired on up to 4,710 acres.	Visual quality could be impaired on up to 20 acres.
Recreation	ORV use would continue on 5 miles of ways at current low levels. Overall recreational use could increase from the present 100 visitor days per year to 150 over the next 20 years. Up to 2,310 acres of mineral-related disturbance and 2,400 acres of land treatment could reduce the quality of primitive recreation.	The WSA, including 5 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost throughout the WSA due to direct disturbance of 4,710 acres (10 percent of the WSA).	Wilderness values would be protected, except on up to 20 acres (less than 0.1 percent of the WSA) which may be disturbed by development of valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with the <i>Kane and Garfield County Master Plans</i> , State of Utah plans and policies, and the current BLM Escalante MFP.	This alternative would not be consistent with Kane and Garfield Counties' concepts of multiple use. It would be consistent with State policy if lands were exchanged. Designation would constitute amendment of the BLM Escalante MFP.

CARCASS CANYON WSA

**TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
CARCASS CANYON WSA**

Resource	Alternatives	
	No Action (Proposed Action)	All Wilderness (46,711 Acres)
Socio-economics	Annual local sales of less than \$17,630 and Federal revenues of up to \$176,712 would continue. An additional \$91,728 per year in Federal revenues could be derived from leasing of presently unleased areas. Proposed land treatments could lead to an annual increase of \$7,600 in livestock sales and \$532 in Federal grazing fees.	Annual local sales of less than \$17,630 and Federal revenues of up to \$270 would continue, but potential Federal revenues of up to \$268,170 from mineral leasing would be foregone, along with potential annual increases of \$7,600 in livestock sales and \$532 in Federal grazing fees. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.

CARCASS CANYON WSA

Canyonlands section has been uplifted and has a number of structural features that are strongly reflected in its topography. These structures include deep canyons, upwarps, monoclines on the flanks of upwarps, salt structures, and local domal uplifts marked by hogbacks, homoclinal ridges, or cuestas. The major stream in the Canyonlands section is the Colorado River, but the San Juan, Green, Gunnison, Dolores, San Rafael, Dirty Devil, Escalante, and other rivers have cut the area in a series of tabular blocks separated by nontraversable canyons. Deep canyons are more common here than in other areas of the United States.

The WSA consists of several canyon systems cut into the Kaiparowits Plateau and a section of the Straight Cliffs. The Straight Cliffs run in a northwest-southeast direction and form the east boundary of the WSA. One arch with a span of 40 feet is located in Calf Canyon.

Elevations vary from less than 5,400 feet in Left-Hand Collet Canyon, at the southeast corner of the WSA, to more than 7,500 feet on top of the Straight Cliffs along the eastern side of the WSA.

The main drainages are Carcass Canyon, Right-Hand Collet Canyon and Willard Canyon, all flowing generally in an easterly direction.

Rocks of Cretaceous Age totaling about 2,000 feet in thickness crop out in the WSA. The Cretaceous Straight Cliffs Formation forms the most extensive outcrop in the WSA. The upper units of the Cretaceous Tropic Shale and Dakota Sandstone Formations are exposed along the eastern boundary, and the lower-most units of the Cretaceous Wahweap Sandstone are exposed along the western boundary.

The Wahweap, Straight Cliffs, Tropic Shale, and Dakota Formations contain invertebrate and vertebrate fossil specimens. Thirteen collection sites have been recorded, containing gastropods and cephalopods in the upper Cretaceous Formations, with vertebrate samples occurring in the Dakota and Tropic Shales. These specimens are likely to occur along the entire length of the Straight Cliffs. The Dakota and Morrison Formations contain significant fossil specimens and should be critically reviewed prior to surface disturbances.

Two ill-defined structural axes, probably extensions of the Rees anticline and the Croton syncline, cut across the WSA in a roughly north-south direction (Doelling and Graham, 1972). Two miles west of the WSA, the Alvey syncline separates the WSA structurally from the east limb

of the Upper Valley anticline. No faults are known to occur within the WSA (Hintze, 1973).

Soils

The major part of the WSA is rockland. Rockland areas occur primarily along the Straight Cliffs and have minimal soil development and surface cover. Bare rock is estimated to be from 50 to 75 percent of the land type. Shallow and very shallow soils make up 20 to 40 percent of this type and are slightly to moderately saline due to the chemical composition of their parent material.

The remaining 5 to 10 percent are deep to moderately deep soils. Runoff is high in this area due to the lack of soil development and surface cover.

Highly erodible soils (silty and silty clay loams) occur in Bull Run, Upper Carcass Canyon, and in portions of the Lower Right-Hand Collet and Willard Canyons. Surface runoff is moderate to high and sediment production is high.

The southeast corner of the WSA (Long, Willard, and Horse Canyons) has shallow to moderately deep fine sandy to coarse gravelly loam soils. Sediment production is moderate to low. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms as defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Critical	2.7	42,000	90	113,400
Stable	0.3	4,711	10	1,413
Total		46,711	100	114,813

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

The major vegetation type in the WSA is pinyon-juniper. The major species in this type are pinyon pine, juniper, sagebrush, and Indian ricegrass. Scattered areas of Douglas fir and ponderosa pine occur at higher elevations. *Penstemon atwoodi* (Atwood beardtongue), a sensitive species, is known to occur in the WSA. No riparian vegetation is found within the WSA.

The Carcass Canyon WSA lies in the Colorado Plateau Province Ecoregion as shown on the

Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The WSA does not contain any perennial streams. The major drainages in the WSA include Carcass Canyon, Right Hand Collet Canyon, and Left Hand Collet Canyon, which drain into Twenty-Five Mile Wash (a tributary of the Escalante River). These washes may flow from July through mid-September during the thunderstorm season.

Two developed and two undeveloped springs occur in the WSA but quality is unknown.

Water rights within the WSA boundaries total 98.34 acre-feet of water annually. Private individuals have the water rights to 6.44 acre-feet of water for livestock watering from Alvey Wash, adjacent to the western boundary of the WSA. The BLM has the right to 89.66 acre-feet of water for livestock watering. The State of Utah has the water rights to 2.24 acre-feet of water annually on State sections enclosed within the WSA (Utah Division of Water Resources, 1969).

The Utah Power and Light Company has filed an application to appropriate 5 second-feet of ground water with the State of Utah. The applicant would utilize the appropriated water (diverted from two point sources) to develop coal leases. However, Utah Power and Light Company has not filed a plan of operation to develop these leases.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 3+ was assigned to the Carcass Canyon WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data,

such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 3.

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c4	Less than 500 tons of uranium oxide ³
Coal	f4	c4	0.55 billion tons
Geothermal	f1	c2	None
Hydroelectric	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

³Approximately 25,850 acres in the central portion of the WSA are in a potential resource area and are rated f2/c4, having a high potential for small deposits of uranium (less than 500 tons of uranium oxide).

CARCASS CANYON WSA

LEASABLE MINERALS

Oil and Gas

There is no evidence indicating the existence of commercially recoverable oil and gas resources within the WSA. To date no exploratory wells have been drilled within the WSA. As a result, no direct data exist to establish whether or not economic deposits of oil and gas occur in the WSA.

Based largely on a comparison between the WSA and the Upper Valley Field 6 miles to the west, SAI (1982) considers the WSA to have a low potential for small widely scattered oil and gas pools. SAI (1982) estimates the amount of recoverable hydrocarbons in such an environment to be less than 10 million barrels of oil or, if gas, no more than 60 billion cubic feet.

The Upper Valley Field is located along the prominent Upper Valley anticline. This anticline is one of several major northwest trending structural folds in the Kaiparowits Basin between the Kaibab uplift to the west and the Circle Cliffs uplift to the east. The producing area is offset from the crest of the anticline to the west flank and the south-plunging nose. Sharp (1976) attributed this offset to a regional, southwest-directed hydrodynamic drive in the Kaibab Formation of the Kaiparowits Basin. This means that oil accumulations in other anticlines within the region may also be displaced to the south.

The south-plunging Rees anticline, which runs approximately north-south through the central and southern portions of the WSA, may be the most favorable structure in the WSA. However, closures on the Rees anticline appear to be considerably less than on the Upper Valley anticline (Irwin, 1976). Two exploratory wells tested the Rees anticline about 20 miles south of the WSA. No oil shows were reported in either well (Kunkel, 1965). There is no evidence to indicate that the oil and gas favorability along the Rees anticline within the WSA differs from the favorability along the Rees anticline outside the WSA.

The structure in the northern portion of the WSA is more typically monoclinical, with dips ranging between 5 and 10 degrees to the west. This monocline may actually be the west limb of the Escalante anticline, another large structural fold located about 5 miles east of the WSA. Three wells tested the oil and gas favorability of this structure 1 mile outside the northeast boundary of the WSA. Two of these wells reported non-commercial oil shows in the Toroweap Formation (Kunkel, 1965). Since the WSA is structurally lower than these oil shows, the potential for struc-

tural traps in this part of the WSA must be considered low. However, some potential for oil and gas certainly exists in stratigraphic and paleogeographic traps in this area.

Under the Escalante MFP, all 46,711 acres within the WSA are open to leasing subject to the standard use and wilderness stipulations (Category 1). There are presently 54 leases covering 41,844 acres (90 percent of the WSA). There are two lease applications for 960 acres. About 4,867 are unleased.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases. In the WSA, there are 27,629 acres of pre-FLPMA leases and 14,215 acres of post-FLPMA leases.

Coal

The Carcass Canyon WSA lies on the eastern side of the Kaiparowits Coal Field, and most of the tract is underlain by the coal-bearing Cretaceous Straight Cliffs Formation. Other minor coal-bearing rocks occur in the Dakota Sandstone and Tropic Shale that crop out in the southern part of the WSA. Except for about 4,000 acres along the eastern boundary of the WSA, all of the WSA contains workable coal (Doelling and Graham, 1972). All of these coal seams are within the Straight Cliffs Formation and include, from oldest

to youngest, the Christensen, Rees, and Alvey coal zones. Coal beds more than 10 feet thick have been measured in the Christensen and Alvey coal zones in nearby areas (Doelling and Graham, 1972).

The WSA contains 42,679 acres of the Kaiparowits Known Recoverable Coal Resource Area (KRCRA). Four thousand thirty-two acres within the eastern portion of the WSA were excluded from the KRCRA. This area corresponds to Doelling and Graham's (1972) area of unworkable coal. None of the area within the WSA was determined to be unsuitable for mining as a result of the application of the unsuitability criteria.

However, according to SAI (1982), development of Kaiparowits Plateau coal will face significant economic and environmental problems. These problems include poor accessibility, lack of abundant water, high costs of underground mining, and competition from nearby areas where coal is more readily available and of better quality, particularly in central Utah, northeast Arizona, and northwest New Mexico.

Doelling and Graham (1972) estimate that coal reserves within the entire Kaiparowits field total 15.2 billion short tons, of which one-third to one-half can be mined by underground methods. According to Doelling and Graham, 0.55 billion short tons of coal reserves (about 3.5 percent of the total in the Kaiparowits field) occur within the area delineated as the WSA.

There are presently eight coal leases covering 16,970 acres (36 percent of the WSA) and one PRLA covering 35 acres within the WSA. Seven leases (10,405 acres) were issued prior to October 21, 1976 and one lease (6,565 acres) was issued after October 21, 1976. Within the KRCRA, 25,709 acres in the WSA remain unleased.

Although minable coal occurs throughout most of the WSA, it appears that about two-thirds of the coal occur in the western and southern portions of the WSA. All of the coal zones thin to the east across the WSA. As a result, only the western and southern portions of the WSA are considered to have the highest potential for development.

Actual development operations for an ore body in these potential resource areas would be by underground methods and would require a minimal amount of surface area. Mines of this size typically require only one portal and one or two air vents. Portal location ideally would be situated at the base of the Straight Cliffs but siting would depend on the exact location of the deposit. Two mine complexes would probably be required for

development of the existing leases. Each mine complex would require an estimated 500 acres (USDI, BLM, 1976). Developmental drilling, especially for detailed delineation of a deposit, could require significantly more surface area than actual mining operations. This would depend largely on the size and complexity of the potential deposit and how much drilling would be involved.

The State of Utah has made application for a mineral rights exchange (U-34420) on approximately 12,260 acres to obtain rights to unleased coal under FLPMA exchange provisions (1976). The case is currently inactive pending resolution of Project BOLD.

Hydroelectric

No potential hydroelectric sites are known to occur within the WSA (Johnson and Senkpiel, 1969; U.S. Army Corps of Engineers, 1979). According to SAI (1982) there is essentially no potential for the development of any hydroelectric resource.

Numerous intermittent streams drain northeast across the WSA. Rainfall in this area is sporadic and not in sufficient quantity to justify the development of even small-scale hydroelectric resources.

Geothermal

No geothermal resources are known to occur within or near the WSA. According to SAI (1982) the geothermal favorability of the WSA is low with a potential only for low temperature geothermal resources.

The WSA lies within the Colorado Plateau, which, in terms of geothermal resources, is characterized by a low heat flow, a long history of relative tectonic stability, and general lack of thermal springs. The scarcity of hot springs may be due in part to a lowered regional water table caused by deep stream incision. If thermal waters do exist, they occur only at considerable depth (Muffler, 1978).

LOCATABLE MINERALS

A total of 133 mining claims (1,900 acres) are presently or partially within the WSA and were located after October 21, 1976. Sixty-seven of these claims lie entirely within the WSA and 56 are located partially within the WSA. There are no apparent workings on any of the claims and it is difficult to determine for which mineral(s) they have been located. However, it is assumed they are located for uranium. None of these claims show any indications of development activity.

Uranium

No uranium deposits are known to occur within the WSA. SAI (1982) reports that only the Morrison Formation within the WSA is favorable for the occurrence of economic deposits of uranium.

The U.S. DOE (1983) estimates approximately 25,850 acres in the central portion of the WSA are within an 84-square-mile area (about 54,000 acres) considered to have a high certainty (c4) favorability (f2) to contain potential resources of less than 500 tons of uranium oxide at forward costs of \$100/lb. The remainder of the WSA is considered by the U.S. DOE (1983) to be in an area favorable for uranium occurrence (f2/c3).

Favorable areas are defined by the U.S. DOE as geographic areas in which the available data indicate the existence of geologic environments favorable for the concentration of uranium. The estimation of potential resources and the classification of an area as favorable does not imply the presence of a deposit, but implies only a potential to contain such a deposit.

The U.S. DOE (1983) estimates that the Carcass Canyon Possible Resource Area has a 50-percent probability to contain a total of 1,500 tons of uranium oxide at a minimum ore grade of 0.01 percent. The areal extent of such a deposit is estimated to be about 250 acres (based on 0.01-percent minimum ore grade and a 6-meter average thickness for host rock). The U.S. DOE has further estimated that about 300 tons of uranium oxide would be available at forward costs (cost of producing a specified amount of uranium) of \$50/lb.

The Triassic Chinle Formation and the Jurassic Morrison Formation are the only rock units considered favorable for uranium in south-central Utah (U.S. DOE, 1979). The Chinle Formation lies at depths exceeding 3,500 feet throughout the WSA (Hintze, 1973). Bendix (1976) points out that uranium deposits found in the Chinle Formation nearby, such as the Henry and Carrizo Mountains, tend to be small and highly localized. Small deposits of this type are economical to extract only when they occur at the surface, near the surface, or when closely grouped. Undiscovered small deposits at depths exceeding 3,500 feet indicate that the potential is low for economic deposits of uranium in the Chinle Formation within the WSA.

The Morrison Formation lies at a depth of about 700 feet throughout most of the WSA (Hintze, 1973).

Wildlife

The Carcass Canyon WSA has habitat that could support approximately 43 species of mammals, 125 species of birds, 17 species of reptiles, and two species of amphibians. No fish exist in the WSA due to the lack of perennial streams or permanent bodies of water.

Major game species include mule deer, cougar, mourning dove, and chukar. Mule deer are fairly common throughout the WSA in the winter. A few cougar are present during the winter months. Mourning dove are common throughout the WSA from May to September. Chukar were introduced into the Escalante area in 1956. They occur in several of the canyons in the WSA and along the Straight Cliffs.

Two endangered species, peregrine falcon and bald eagle, have been recorded within 10 miles of the WSA. They may occasionally migrate through the WSA.

The Utah Division of Wildlife Resources (UDWR, 1982) list of sensitive species includes three species that occur in the WSA: Lewis woodpecker and the western and mountain bluebirds.

Approximately eight species of raptors are known to nest in the WSA. The golden eagle, red-tailed hawk, Cooper's hawk, and the American kestrel are fairly common in the WSA.

No critical habitat has been identified in the WSA. No existing or proposed wildlife habitat plans or projects have been identified in the WSA.

Forest Resources

Forest resources in the WSA are associated with the pinyon pine and juniper that occur throughout the WSA. The entire WSA is open to fuelwood collecting but, due to limited access and the topography of the area, use is minimal. Approximately 150 cords of fuelwood and an unknown number of juniper posts have been harvested from the WSA, primarily by residents of Escalante, Utah. Use occurs primarily in the Alvey Wash area along "cherry-stemmed" roads.

Livestock and Wild Horses/Burros

The WSA contains portions of five livestock grazing allotments. There are approximately 196 AUMs within the WSA. Approximately 2,523 acres are suitable for grazing, with 44,188 being unsuitable. Nineteen operators are licensed to graze cattle within the WSA (refer to Table 4). At pres-

CARCASS CANYON WSA

ent there are 2.5 miles of fence, two spring developments, and one corral within the WSA. Twenty-four hundred acres of seeding and three reservoirs are proposed for the WSA. The land treatment would provide approximately 380 additional AUMs of livestock forage. The projects were identified to better distribute livestock grazing in the allotments. Vehicles are not generally used within the WSA for management of livestock.

There are no wild horses or burros in the WSA.

Visual Resources

The BLM visual resource inventory classified approximately 43,911 acres as Class B and 2,800 acres as Class C scenery. The entire WSA has been assigned a VRM Class IV. (Refer to Appendix 7 for more information on BLM's VRM system.) The major visual resource of the WSA is the Straight Cliffs which constitute a landmark in southern Utah.

Cultural Resources

Based on archaeological surveys (USDI, BLM, 1978b), site densities within the majority of the WSA are low (one to 10 sites per 23,000 acres), with one area in the southern portion of the WSA containing moderate densities (11 to 49 sites per 23,000 acres).

Site records indicate eight archaeological sites have been recorded in the WSA. The sites consist of open campsites, lithic scatters, petroglyphs, and cave habitation sites. None of these sites have been nominated to the National Register of Historic Places.

Recreation

The Carcass Canyon WSA offers opportunities for both primitive and nonprimitive types of recreation use. Reliable data on existing visitor use are not available. Sightseeing use of the WSA by motor vehicle tourists on the Hole-in-the-Rock road accounts for the majority of use of the WSA. The entire WSA is open to ORV use.

TABLE 4
Livestock Grazing Use Data

	Allotment						Total
	Alvey Wash	Cedar Wash	Collets	Last Chance	Upper Cattle	Unallotted	
Total Acres	60,140	12,807	17,440	253,522	129,391		473,300
Acres in WSA	11,382	1,151	16,045	14,549	3,269	317	46,711
Suitable Acres in WSA	1,613	0	190	210	510	0	2,523
Unsuitable Acres in WSA	9,769	1,151	15,855	14,339	2,757	317	44,188
AUM Grazing Preference in WSA	106	0	8	31	51	0	196
Livestock Permittees Using WSA	1	4	1	1	12		19
Existing Improvements	1 Spring 1 Corral 1.75 mile of fence	None	0.5 mile of fence	1 Spring develop. 0.25 mile of fence	None		
Proposed Improvements	None	None	None	2,400 acres seeding 3 reservoirs	None		

Source: USDI, BLM, 1979a.

CARCASS CANYON WSA

The majority of recreational use is associated with sightseeing use of the Straight Cliffs from the Hole-in-the-Rock road. Approximately 7,500 visitors annually travel this road. Some motor vehicle sightseeing also occurs from the Alvey Wash road at the western boundary of the WSA. Both of these are outside the WSA. Camp Flat and Big Sage Bench receive some ORV use, but this use is primarily nonrecreational and associated with ranch operations. Recreational use within the WSA is estimated to be less than 100 visitor days per year. About 10 percent of this use would be for primitive recreation use and the remaining 90 percent for ORV play, hunting, or sightseeing activities.

Wilderness Values

SIZE

The Carcass Canyon WSA is approximately 20 miles long (north to south) and 11 miles wide (east to west) and encompasses 46,711 acres.

NATURALNESS

Imprints in the WSA include 2.5 miles of fence, two spring developments, one corral, and 5 miles of ways. Overall, the WSA is natural, with the imprint of man substantially unnoticeable. The high quality of naturalness has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b) decision. No additional imprints have occurred in the WSA as a result of impairing uses or activities allowed under the *BLM Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

The WSA affords outstanding opportunities for solitude where topographic and vegetation screening elements occur in combination. The size and configuration of this WSA are considered to neither enhance nor detract from the outstanding opportunities for solitude present in the WSA.

The outstanding opportunities for solitude are located in the Right Hand and Left Hand Collet drainages where canyons and intervening rim-rock ridges offer superior topographic screening. This topographic screening is enhanced by vegetation screening created by pinyon-juniper, Douglas fir, and ponderosa pine forest. Most of the canyons within the WSA exhibit outstanding opportunities for solitude. In much of the remainder of the WSA, the benches and ridges between canyons are flat with a pinyon-juniper forest cover of moderate density. In the Calf Canyon-Alvey Wash area, the Carcass Canyon

drainage, and the area north of Willard Canyon, the intervening ridges exhibit extensive ledging and shelving. These ridges also possess a denser forest cover. It would be easy for a visitor to find seclusion in the Carcass Canyon system of canyons. Outstanding opportunities for solitude are present on these ridges.

The sights and sounds of human activities are not present from most places within the WSA. From the top of the Straight Cliffs, vehicular activity on the Hole-in-the-Rock road can be observed. This activity is a minor aspect of the panorama.

In summary, it is felt that approximately 26,500 acres (57 percent of the WSA) present opportunities for solitude that meet the outstanding criterion for lands under wilderness review. The topographic and vegetation screening enable visitors to find a secluded spot in the majority of the WSA.

PRIMITIVE AND UNCONFINED RECREATION

The opportunity to explore in a primitive, unconfined recreational sense is considered outstanding in the Carcass Canyon WSA. No other outstanding individual activity was identified, nor has a diversity of primitive activities been identified.

This exploration-hiking opportunity is outstanding in complex canyon systems, along the top of the Straight Cliffs, and on the narrow ridges in the WSA. The Carcass Canyon drainage is an area of 15 square miles that exhibits the most complex pattern of canyons in the WSA. There are three major forks to Carcass Canyon, and these branches possess 16 miles of canyon bottom. Numerous lateral canyons join the main branches, and a total of 43 miles of canyons is present within the drainage. At approximately 3 miles of canyon bottom per square mile, the Carcass Canyon drainage exhibits the highest density of canyons in the WSA. Because of the density of canyons, the intervening ridges between canyons in the Carcass Canyon drainage are extremely narrow and precipitous and represent the best opportunity for hiking and exploration. The rim of the Straight Cliffs also exhibits this opportunity, with an additional 1,700 acres present north and south of the Carcass Canyon area.

Outstanding opportunities for primitive recreation are found on 11,800 acres (25 percent) of the WSA.

Approximately 27,800 acres of the WSA possess outstanding opportunities for either solitude or primitive recreation. Approximately 18,911 acres lack the outstanding opportunity characteristics and do not meet the statutory standard. Of the

27,800 acres that meet the standard, 10,500 acres have both outstanding opportunities for primitive recreation and for solitude.

SPECIAL FEATURES

The Carcass Canyon WSA exhibits several special features. The locations, estimated abundance, and importance of the geological features that contribute to scientific, educational, scenic, or historical values are summarized below.

The paleontological values contained within the WSA are of scientific value. Invertebrate and vertebrate specimens are found in the Straight Cliffs, Tropic Shale, and Dakota Formations. These scientific values are likely to occur along the entire length of the Straight Cliffs.

The ancient coal fires of Right Hand Collet Canyon have left their marks, leaving surface remains in the form of clinkers and deep red ash. Although these remains dominate the visual character in portions of this drainage, they could not be considered to represent geological features, which contribute significant scientific values.

No educational values of significance have been identified in the WSA. No developed nature trails or other formal interpretive facilities are present. The WSA has not been the object of university geology field trips nor of student-oriented archaeological excavations.

The Straight Cliffs, rising 2,000 feet above the Escalante Valley floor, are a scenic landmark in southern Utah. These cliffs are the dominant topographic feature between the Town of Escalante and Lake Powell. The cliffs offer spectacular scenic views of the Escalante River drainage, the Waterpocket Fold, Boulder Mountain, and the Henry Mountains and are considered the most important scenic value within the unit. The remaining canyon scenery of the Collet systems, Sarah Ann, and Carcass Canyons are noteworthy but are typical of the scenery found on the Kaiparowits Plateau. One arch with a span of 40 feet is located in Calf Canyon and is visible from the Alvey Wash road. It is an interesting landmark but is common in shape and relatively small when compared with other arches represented in the Escalante drainage.

Eight archaeological sites have been recorded in this WSA. The sites consist of open campsites, lithic scatter, petroglyphs, and cave habitation sites. However, none of these sites have been tested to determine their importance and, for the

present, it must be assumed that no supplemental values are present.

Land Use Plans and Controls

Public and State of Utah lands lie within the boundaries of the WSA. Public lands within the WSA are in the Escalante Planning Unit and are managed in accordance with the Escalante MFP (USDI, BLM, 1981a). Grazing is the principal land use in the WSA. Approximately 1,920 acres of State land and 640 acres of State minerals and Federal surface (split estate) are within the boundaries of the WSA.

The WSA lies adjacent to major portions of the Kaiparowits Coal Field (refer to Mineral and Energy Resources, Coal section). The Kaiparowits Coal Development and Transportation Study (Environmental Research and Technology, Inc., 1980) identified potential coal transportation systems and corridors necessary for the future development of Kaiparowits coal reserves. The WSA lies outside of all proposed corridors, but a potential access road for coal development was identified adjacent to the western boundary of the WSA.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers this WSA. The Master Plan recognizes that the county possesses "... some of the most spectacular scenery in the United States ... The County is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service Unit be recommended for wilderness. The County Plan recommends that the remaining lands within the County, including Carcass Canyon WSA, be retained for multiple uses. The Plan's concept of multiple-use includes forestry, livestock grazing, mining, wildlife, and recreation.

The Kane County Master Plan (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple use concept."

Socioeconomics

DEMOGRAPHICS

The Carcass Canyon WSA is located in both Garfield and Kane Counties, Utah. Most economic impacts are expected to be restricted to these two counties. Garfield and Kane are rural counties having average population densities of less than one person per square mile. This density is very low when compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in these counties (3,673 persons in Garfield and 4,024 in Kane County) is concentrated in small communities rather than being evenly distributed throughout the area.

The community of Escalante lies along a major access route (Utah Highway 12) to the Carcass Canyon WSA. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is a gateway and service area for visitors to the WSA.

EMPLOYMENT

The economies of Kane and Garfield Counties are somewhat similar in structure, both being dominated by the government sector and having strong services sectors in terms of employment (USDC, Bureau of Economic Analysis, 1982). The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (18 percent), and services (13 percent). The three most important sectors of the Kane County economy in terms of 1980 employment are: government (17 percent), retail trade (17 percent), and services (14 percent). Table 5 presents the employment and personal income estimates for the two counties.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the nongovernment employment and income in the area is based in the agriculture and services sectors. This is based upon the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

TABLE 5
Employment and Personal Income
Garfield and Kane Counties, Utah

Industrial Sector	Garfield County		Kane County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	2,143	24,792	1,452	12,595
Proprietors	349	2,637	382	2,623
Farm				
Proprietors	209	807	122	136
Nonfarm				
Proprietors	140	1,830	260	2,487
By Industry				
Source				
Farm	27	949	27	382
Nonfarm	1,767	23,843	1,043	12,213
Private	1,332	19,049	798	9,614
Ag. Serv., For.,				
Fish and				
Other (L)	79	(L)	0	
Mining	208	4,222	17	196
Construction	379	5,536	51	1,544
Manufacturing	247	3,294	70	566
Non durable				
Goods	(D)	(D)	(D)	(D)
Durable				
Goods	(D)	(D)	(D)	(D)
Transportation and Public				
Utilities	84	1,545	150	1,875
Wholesale				
Trade	(L)	96	12	230
Retail Trade	126	1,302	252	2,364
Finance,				
Insurance and				
Real Estate	16	189	39	392
Services	270	2,786	202	2,427
Government and Government				
Enterprises	435	4,794	245	2,599
Federal,				
Civilian	140	1,656	18	252
Federal,				
Military	24	64	30	78
State and				
Local	271	3,074	197	2,269

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral exploration and leasing, livestock production, woodland production, and recreation. Table 6 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

The WSA has 133 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy.

TABLE 6
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$125,532
Coal	0	\$50,910
Mining Claim		
Assessment	Less than \$13,300	0
Livestock Grazing	\$3,920	\$270
Woodland Products	0	Unknown
Recreational Use	Less than \$410	0
Total	Less than \$17,630	Up to \$176,712

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not significantly contributed to local employment or income.

Nineteen livestock operators have a total grazing privilege of 196 AUMs within the WSA. If all this forage were utilized, it would account for \$3,920 of livestock sales including \$980 of ranchers' returns to labor and investment.

Some woodland products are harvested from the WSA; however, the harvests have been small and are insignificant to the local economy and only of minor significance to those involved in the harvest.

The WSA's nonmotorized and motorized recreational use is low and related local expenditures are also low. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Carcass Canyon WSA is estimated as less than 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Kane and Garfield Counties.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 6).

Oil and gas leases in the WSA cover approximately 41,844 acres and coal leases cover 16,970 acres. At \$3 per acre, lease rental fees generate up to \$176,442 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds,

the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 196 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$270 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for all Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the

methodology for estimation of potentially recoverable energy resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative (Proposed Action)

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and coal exploration and development. The area would be partially open to ORV use, mining, grazing, motorized hunting, predator control, and fire, insect, and noxious weed control. The degree of future development is unknown but would probably be low due to the unit's rough terrain. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: coal, 2,130 acres; oil and gas, 160 acres; and uranium, 20 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) There would also be 2,400 acres of land treatment for livestock range improvements under this alternative. The 2,400-acre figure is used for analysis purposes. However, the probability of such extensive land treatment is low.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If the unit's minerals are developed, air quality could be reduced up to the PSD Class II limitations. Disturbance of 2,310 acres from mineral development would result in increases in fugitive dust emissions. The amount of emissions and their significance would depend on the location and duration of the disturbance. The proposed land treatment could have a short-term negative impact on air quality; however, in the long term, air quality could be improved due to increased ground cover.

GEOLOGY

Few impacts to geology are expected from surface disturbance associated with uranium and oil and gas on 180 acres. Underground mining of coal would take place on about 91 percent of the WSA. Subsidence and fracturing of formations would occur from coal mining; however, the extent is unknown.

SOILS

It is estimated that up to 2,310 acres of soil could be disturbed by mineral and energy exploration and development. Assuming that all disturbance would occur in areas with critical erosion class

(worst-case analysis) and that erosion condition would increase one class, soil loss on the 2,310 acres would increase from 5,751 cubic yards/year to 11,502 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 5,751 cubic yards (5 percent) over current annual soil loss. This increase and its effects would likely be imperceptible due to the highly erodible soils in the WSA.

The proposed land treatments of 2,400 acres could cause a temporary (2 to 3 year) increase in erosion. However, after the new seedings are established, erosion condition could be expected to improve on 5 percent of the WSA.

VEGETATION

The anticipated maximum of 2,310 acres disturbed from mineral activity would not significantly impact the WSA's sparse vegetation. The proposed land treatments (2,400 acres) would change the area treated from a pinyon-juniper type to a grassland type.

One sensitive plant species is found within or near the WSA. Before authorizing surface-disturbing activities (4,710 acres potential from mineral activity and land treatments) the BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, the BLM would initiate consultation with the Fish and Wildlife Service (FWS) as required by BLM policy. The BLM would request a biological opinion when appropriate (refer to Appendix 4). Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of threatened, endangered, or sensitive plant species would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 5,751 cubic yards of annual soil loss from mineral surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Escalante Planning Unit.

The proposed land treatments on 2,400 acres could cause a temporary (2 to 3 year) increase in

TDS. However, after the new seedlings are established, water quality could be expected to improve.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and would not significantly impact ground water quality or quantity. The quality and flow of ground water in the WSA could be reduced by underground coal mining on 91 percent of the WSA. The impact of coal mining on ground water would be partially mitigated by constraints on developments required by State laws.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected under this alternative.

Coal

An estimated coal resource of 0.55 billion tons (approximately 200 million tons recoverable) occurs on 42,679 acres of the WSA. About 16,970 acres are under lease in the Carcass Canyon. This resource could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that up to 2,130 acres of surface disturbance would occur from coal development on the existing leases. The likelihood for production of coal by underground methods is thought to be low in the near future on the 16,970 acres under lease within the WSA due to poor access to markets and more competitive coal available in other areas; however, the potential for development is high in the long term.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposit of up to 500 tons of uranium oxide could be developed. Approximately 20 acres could be disturbed due to exploration and development of this locatable mineral resource. However, the likelihood of development is thought to be min-

imal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the forage due to the proposed 2,400 acres of livestock land treatment. The new forage could increase wildlife numbers and condition of existing animals. However, disturbance of an estimated 2,310 acres (5 percent of the WSA) through mineral and energy exploration and development would disrupt wildlife. Deer and mobile nongame animals would be dispersed from the area of disturbance for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. The three sensitive bird species that could occur in the WSA would not be impacted due to their mobility and the small portion of the WSA that would be disturbed.

FOREST RESOURCES

The major vegetation cover is pinyon and juniper, none of which is presently utilized (except by occasional campers or hikers). Historically some firewood has been cut in the WSA (150 cords). Little increase in harvest of forest products is foreseen because of the limitations of topography and limited demand. The mineral surface-disturbing activities on 5 percent of the WSA would not result in significant loss of forest resources.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante Planning Unit MFP. The 196 AUMs currently allocated in the WSA are controlled by 19 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. The three proposed reservoirs and 2,400 acres of land treatment could be developed and would result in improved livestock distribution and increased carrying capacity (380 AUMs). Additional roads or other facilities could be developed without regard for wilderness values.

VISUAL RESOURCES

Under this alternative, 2,400 acres of vegetation manipulation would occur and 2,310 acres of mineral-related exploration and development are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM

objectives would be met in the WSA which is a Class IV area.

CULTURAL RESOURCES

Cultural values in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 2,310 acres by mineral exploration and development and 2,400 acres by land treatment under this alternative could affect cultural sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts.

Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism could be a problem and would increase in proportion to the general population increase.

RECREATION

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative, 2,400 acres of vegetation manipulation would occur and mineral-related exploration and development are possible on 2,310 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation and would increase use within the WSA.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 100 current visitor days per year to 150 visitor days at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 10 visitor days per year to about 15 visitor days per year over the next 20 years. Likewise, recreational activities utilizing vehicular access (hunting, sightseeing, etc.) would increase from 90 visitor days per year to 135 visitor days.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante Planning Unit MFP. Expected mineral and energy exploration and development could disturb an estimated 2,310 acres and land treatments could disturb 2,400 acres.

Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) could be lost or diminished in affected areas. The impacts to these values probably would be significant due to the large surface disturbance anticipated. The 2,310 acres of mineral-related surface disturbance could result in significant loss of naturalness and solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Garfield and Kane County Master Plans* that recommend multiple use. This alternative is based on implementation of the current BLM Escalante Planning Unit MFP and is, therefore, in conformance with it. The No Action Alternative would also be consistent with State of Utah plans and policies, which emphasize economic return.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the oil and gas, coal, and uranium in the WSA were developed it would lead to a significant increase in employment and income for Kane and Garfield Counties. The probability of economic development of coal within the WSA is high in the long term (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (196 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The proposed land treatments would produce 380 AUMs of new allocated forage that could lead to \$7,600 of livestock sales and \$1,900 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only 49 visitor

days per year over the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 4,867 acres open to leasing for oil and gas and 25,709 acres open to leasing for coal in the WSA that are currently not leased. If leased they would bring up to \$91,728 additional Federal lease fee revenues per year, in addition to new royalties from lease production and bonus bids from new leases in Known Geologic Structures (KGSs). Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$270 per year) would continue. The additional 380 AUMs of forage produced by proposed new range improvements and allocated to livestock under this alternative would increase Federal revenues by \$532 annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (46,711 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 46,711-acre area would be related to withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 5 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that existing mining claims or new claims would be staked before wilderness designation and would cause an estimated 20 acres of disturbance within the WSA. (Appendix 10 lists surface disturbance assumptions and estimates for the WSA.) It is also assumed that existing oil and gas leases would expire before production of commercial quantities and that coal leases would expire before diligent requirements are met. Oil and gas and coal leases would not be renewed and future leasing of oil and gas or coal would not be allowed. The proposed 2,400 acres of land treatment for livestock purposes would not be allowed.

Because potentially disturbed areas for this alternative would be smaller than under the No

Action Alternative (20 vs. 2,310 acres) and land treatment and coal mining would not take place, the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could not occur unless they could be developed in a manner that would not impair wilderness. The proposed three reservoirs would probably not be developed.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and these activities would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 41,844 acres (27,629 acres pre-FLPMA and 14,215 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

Existing pre-FLPMA and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas with 3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Coal

The WSA has an estimated coal reserve of 0.55 billion tons of which 200 million tons are recoverable. These leases can be developed even if the WSA is designated wilderness if diligent development occurs and the leases are renewed. It is believed that diligent development will not occur on the existing leases before they expire because

of poor accessibility, lack of water, high cost of underground mining, and competition from other areas. Therefore, it is concluded that the potential development of 42,679 acres of coal resources (0.55 billion tons of reserve) would be foregone.

Locatable Minerals

Approximately 1,900 acres are under mining claim within the WSA, principally for uranium. About 500 tons of uranium oxide are predicted to occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If the potentially recoverable minerals are not within mining claims filed before designation, the potential for recovery of the uranium oxide would be foregone.

It is estimated that, if uranium deposits are located prior to designation, up to 20 acres could be disturbed due to exploration of uranium should this alternative be adopted. Because production of this metal is not currently occurring and economic considerations (e.g., transportation, low potential, market price, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of the uranium oxide resource.

WILDLIFE

Under this alternative, some wildlife including three sensitive bird species could benefit due to the preservation of solitude. However, the loss of three livestock reservoirs and the 2,400-acre land treatment would have a negative impact on wildlife.

Potential disturbance (20 acres) due to exploration and development of locatable mineral resources could disrupt wildlife populations and result in these species leaving the area.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante Planning Unit MFP. The 196 AUMs currently allocated in the WSA are controlled by 19 livestock permittees. The proposed 2,400-acre land treatment would not be allowed. Therefore, an additional 380 AUMs of livestock forage would be foregone.

Existing rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purpose of rangeland and/or wilderness protection and the effective management of these

resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values.

Because few improvements have been proposed for the WSA and there is only limited use of motorized vehicles for livestock management, little effect on the management of livestock grazing is expected other than the loss of the potential 380 additional AUMs.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative the disturbance from 2,400 acres of planned vegetation manipulation would not occur and the possible mineral and energy related surface disturbance would be reduced from 2,310 acres to 20 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and cur-

rent trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. The 90 visitor days of ORV play activity and/or vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA and 5 miles of ways would be closed. Because there are other similar areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA.

If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for locatable mineral production is low and wilderness designation would reduce the potential for locatable surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

It is concluded that this alternative could benefit primitive recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of primitive recreational values. However, overall recreational use inside the WSA could decline because of ORV closure and closure of existing ways.

WILDERNESS VALUES

Designation and management of all 46,711 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive recreation. The solitude characteristic would be preserved on approximately 26,500 acres that meet the standards for outstanding opportunity for solitude. Naturalness would be preserved on all 46,711 acres and the primitive and unconfined recreation characteristic would be preserved on 11,800 acres that meet the standards for outstanding opportunities. No development of leases is foreseen under this alternative. The possible mineral-related surface disturbance would therefore, be reduced from 2,310 acres to 20 acres for development of valid mining claims and existing energy leases. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment would be allowed for development of valid mining claims and energy

leases if there are no reasonable alternatives. Because there are 1,900 acres (4 percent of the WSA) under mining claims, mineral-related disturbance, including access, would eliminate naturalness and the opportunities for solitude and primitive and unconfined recreation on the affected areas and could reduce these values in the area as a whole until the disturbed areas are satisfactorily reclaimed. However, because the potential for mineral production is low and mitigation would be imposed to protect wilderness values, loss of these values under wilderness designation would be less likely than under the No Action Alternative.

The outstanding opportunity for primitive recreational activities (exploring) would be preserved. Although recreational use could increase (refer to Recreation section above), this increased use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreation would be expected.

LAND USE PLANS AND CONTROLS

The existing BLM Escalante Planning Unit MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Escalante MFP.

The *Garfield and Kane County Master Plans* recommend multiple use for public lands in the area. This alternative would not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. However, designation would conflict with the Counties' plans because oil and gas and coal leases would expire and future leasing and location of minerals would not be allowed.

If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 6) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

CARCASS CANYON WSA

The potential for mineral development in the WSA is moderate (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but would alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for coal development is high in the long term, it is estimated that potential mineral-related local income would be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$3,920 of livestock sales and \$980 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with about \$7,600 per year in livestock sales including \$900 in ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use; however, motorized recreational use would decline (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would not be significant.

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CARCASS CANYON WSA

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Scorpion
WSA



SCORPION WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	2
Alternatives Considered and Eliminated from Detailed Study	2
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative	4
Partial Wilderness Alternative (Proposed Action).....	6
Summary of Environmental Consequences	9
AFFECTED ENVIRONMENT	9
Air Quality	9
Geology	9
Soils	9
Vegetation	12
Water Resources	12
Mineral and Energy Resources	12
Wildlife	14
Forest Resources	15
Livestock and Wild Horses/Burros	15
Visual Resources	15
Cultural Resources	15
Recreation	15
Wilderness Values	16
Land Use Plans and Controls	18
Socioeconomics	18
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	19
Analysis Assumptions and Guidelines for All Alternatives	19
No Action Alternative	20
All Wilderness Alternative	22
Partial Wilderness Alternative (Proposed Action).....	25
BIBLIOGRAPHY	29

SCORPION WSA

(UT-040-082)

INTRODUCTION

General Description of the Area

The Scorpion Wilderness Study Area (WSA) is located in Kane and Garfield Counties approximately 25 miles southeast of the Town of Escalante and adjacent to the western boundary of the Glen Canyon National Recreation Area (NRA). The WSA contains 35,884 acres of BLM-administered land, of which 9,631 acres are in Garfield County and 26,253 acres are in Kane County. The WSA encloses 1,280 acres (two sections) of State land. It is managed by the BLM's Cedar City District, Escalante Resource Area Office.

Scorpion WSA includes two major tributaries, Twenty-Five Mile Wash and the Dry Fork of Coyote Wash, which eventually drain into the Escalante River. Narrow, winding canyons total 56 miles in length and cover over 5,000 acres. The dominant vegetation is desert shrub, and much of the area is comprised of colorful slickrock.

In general, the climate is temperate and arid with annual precipitation averaging about 10 inches. From June through early September convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates generally occur from November through March.

Summer temperatures in Escalante, Utah range approximately 30 degrees Fahrenheit (F) with highs in the upper 90s and lows in the mid 60s. Winters in Escalante, Utah have a temperature range of about 27 degrees F, with highs in the low 40s and lows about 15 degrees F. Snowfall in Escalante averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I.

Major issues identified for the Scorpion WSA during the study phase are wilderness quality and consistency with the Glen Canyon NRA Management Plan. A minor issue is the potential of changing air quality standards. Issues and concerns specific to Scorpion WSA raised in the spring of 1984 public scoping meetings (USDI, BLM, 1984) are responded to below.

1. *Comment:* Mineral resource potential and development would conflict with wilderness designation.

Response: Wilderness designation would close the WSA to future leasing of minerals such as oil and gas. It would also close the area to location of mining claims. However, if a valid discovery is made prior to designation on an existing lease or mining claim, the mineral could be developed.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal lands?

Response: Wilderness designation would be consistent with the adjacent wilderness area proposed in Glen Canyon NRA. Glen Canyon borders the WSA along its northeastern boundary.

3. *Comments:* (1) BLM's preliminary planning recommendation of no wilderness is an error in the wrong direction. At least the 11,400 acres of this WSA mentioned in the scoping brochure as meeting *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964) standards should be part of BLM's final proposal. (2) Apparently there were irrational deletions of all or parts of the WSAs and Instant Study Areas (ISAs). After review of Site-Specific Analysis (SSA) summaries in the scoping document, it becomes apparent that many areas have no resource conflicts and excellent wilderness qualities, yet no acres were recommended for wilderness.

Response: During scoping for the Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input



is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received, and at that time, will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

4. *Comment:* The oil and gas (mineral) potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be at least high. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

No alternatives were considered for this WSA other than those analyzed.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (35,884 acres); and (3) Partial Wilderness (9,620 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

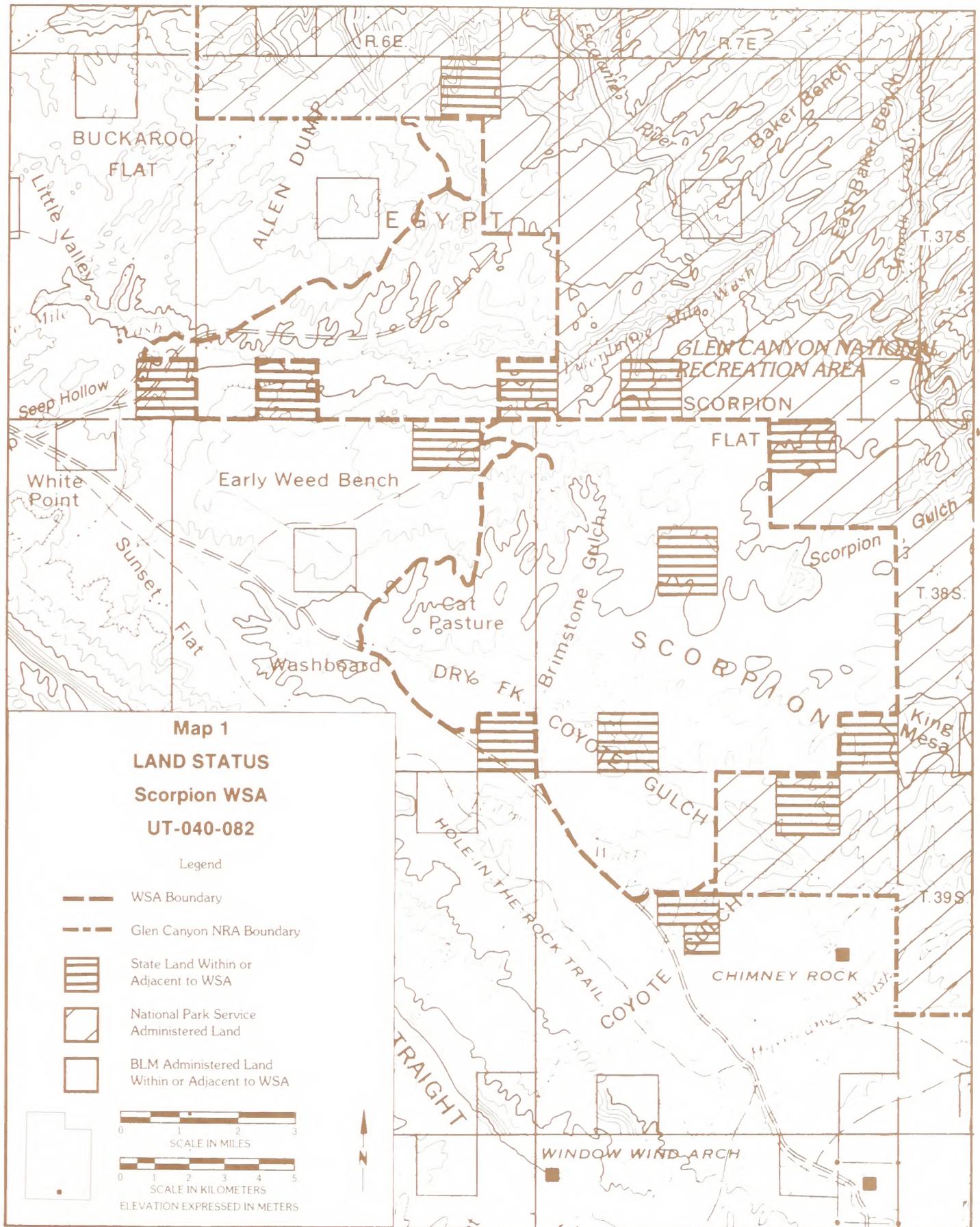
NO ACTION ALTERNATIVE

Under this alternative, none of the 35,884-acre Scorpion WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Escalante Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1979a). The State land within the WSA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase. Refer to Volume I for further information on State in-holdings.

The following are specific actions that would take place under this alternative:

- All 35,884 acres would remain open to mineral location, leasing, and sale. No mining claims are presently located in the WSA. Development work, extraction and patenting would be allowed on future mining claims under unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809), without concern for wilderness values. Existing oil and gas leases (30,370 acres) and future leases could be developed under leasing Category 1 (standard stipulations) in the entire WSA.
- The present domestic livestock grazing use in the WSA would continue as authorized in the MFP (currently 2,496 Animal Unit Months [AUMs]). With the exception of 200 feet of fence, no range developments presently exist in the WSA. New range developments, including a proposed .75 mile of fence, pipeline, storage tank, and trough would be allowed without wilderness considerations.
- Developments for wildlife, water resources, etc. could be allowed if in conformance with the MFP; however, no developments are planned in the WSA.
- The entire WSA acreage would be open to off-road vehicle (ORV) use and new access routes for development could be allowed.
- The entire WSA would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (7,700 acres), Class III (3,200 acres), and Class IV (24,984 acres).

SCORPION WSA



SCORPION WSA

- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 35,884 acres of the Scorpion WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of two sections of State land (1,280 acres) within the WSA and seven sections adjacent to the WSA (refer to Map 1) would be likely and could be authorized by purchase or exchange. Four other State sections adjacent to the WSA would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. No private or split estate lands are located in the WSA. figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 35,884 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims are located in the WSA. Should any be located prior to wilderness designation, development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Existing oil and gas leases involving about 30,370 acres would expire

unless an oil or gas find in commercial quantities is shown prior to wilderness designation.

- Present domestic livestock grazing would continue as authorized in the Escalante Planning Unit MFP. The 2,496 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of range developments existing at the time of designation would continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that after designation, new range developments (those planned include a fence, pipeline, storage tank, and trough) would be allowed if necessary for the protection or effective management of the rangeland and/or wilderness resource and if development can be carried out consistent with wilderness protection standards (refer to Appendix 1).
- New water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed after designation only if compatible with wilderness values, needed to correct an imminent hazard to life or property, or authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. No water resource facilities or watershed treatments are located in the Scorpion WSA, and none are planned.
- Wildlife transplants or developments would be allowed after designation if compatible with wilderness values. None are now existing and none are planned.
- The entire WSA would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments. About 4 miles of existing vehicular ways would not be available for vehicular use except as indicated above. The approximately 3 miles of dirt and gravel roads that border the WSA and approximately 2 miles of "cherry-stemmed" roads would remain open to vehicular use.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 35,884-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be

allowed along roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.

- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to hand and aerial methods.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

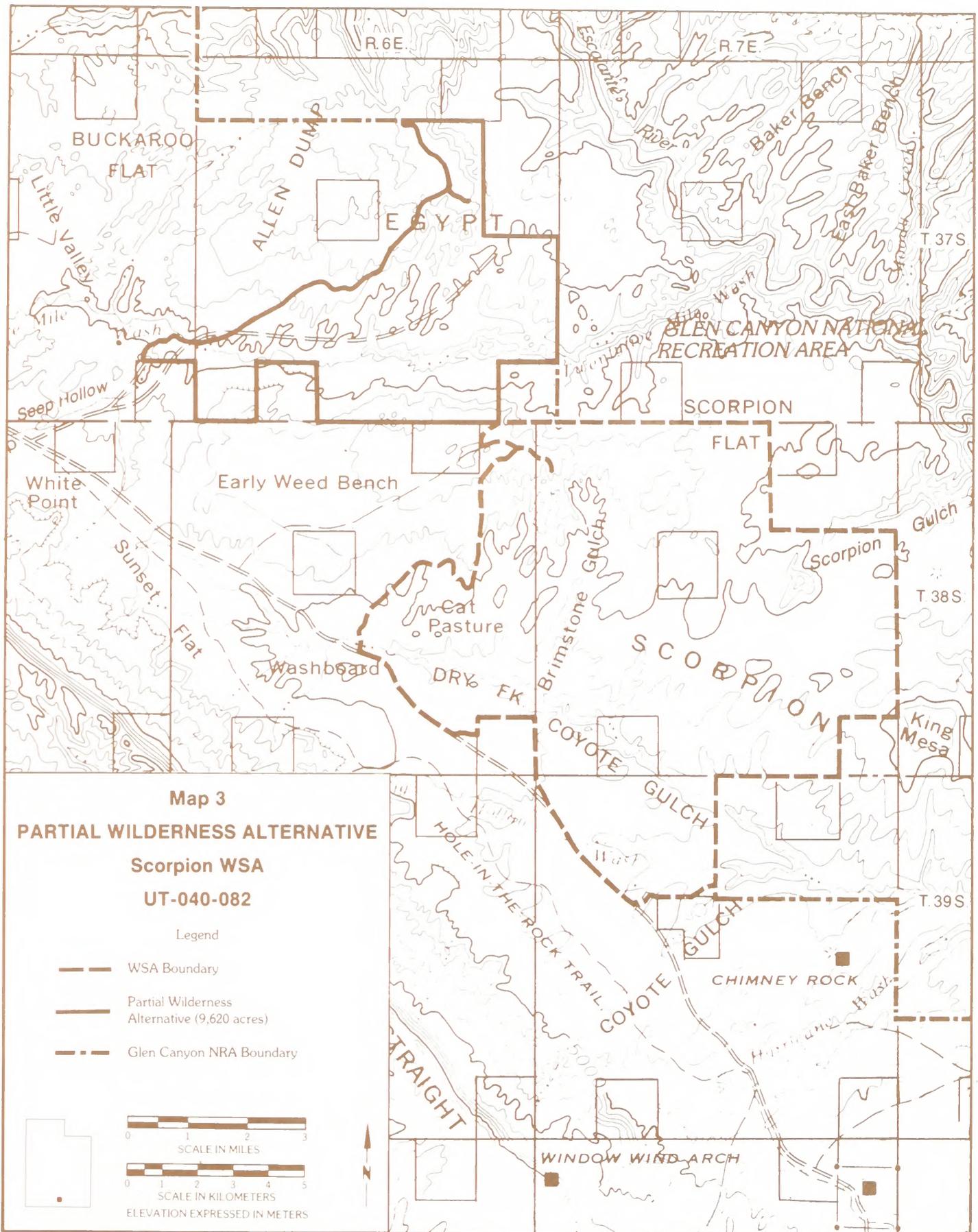
PARTIAL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, 9,620 acres of the Scorpion WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA with the most outstanding wilderness values. The remaining 26,264 acres in the southern portion of the WSA would be managed in accordance with the Escalante MFP as described for the No Action Alternative. The 9,620-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. No State or private lands are located in the wilderness area. Two of five other State sections adjacent to the WSA probably would be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. (Refer to Appendix 3 for further information on State in-holdings.)

A summary of specific actions under this alternative follows:

- The 9,620-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Currently, there are no mining claims located in the WSA. Should any be located in the wilderness area prior to wilderness designation, they would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Existing oil and gas leases covering 9,420 acres would expire unless a find in commercial quantities is shown. The 26,264-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of future mining claims could occur if the claims are valid. Development of existing oil and gas leases (20,950 acres) and future leases could occur without concern for wilderness values. The area (26,264 acres) not designated wilderness would be managed as oil and gas leasing Category 1 (standard stipulations).
- Domestic livestock grazing would continue as authorized in the Escalante MFP. The 380 AUMs in the wilderness area would remain available to livestock as presently allotted. In the wilderness, the existing fences (200 feet in length) could

SCORPION WSA



Map 3

PARTIAL WILDERNESS ALTERNATIVE

Scorpion WSA

UT-040-082

Legend

-  WSA Boundary
-  Partial Wilderness Alternative (9,620 acres)
-  Glen Canyon NRA Boundary



ELEVATION EXPRESSED IN METERS

SCORPION WSA

continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. Rangeland developments would be allowed after designation only if necessary for the protection and effective management of the rangeland and/or wilderness resources, and if wilderness protection criteria are met. In the 26,264-acre nonwilderness area, grazing use of 2,116 AUMs would also continue as authorized in the MFP.

- In the 9,620-acre wilderness new water resource facilities or watershed activities (other than range developments) would be allowed only if compatible with wilderness, needed to correct imminent hazards to life and property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the 26,264-acre nonwilderness area, water resource developments would be allowed if in accordance with the MFP. None are now planned.
- In the wilderness area, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the 20,950-acre nonwilderness area, wildlife transplants or improvements would be allowed if in accordance with the MFP without consideration for wilderness values. None are now planned in either the wilderness or nonwilderness areas of the WSA.
- The 9,620-acre wilderness area would be closed to ORV use. The remainder of the unit would remain open to vehicular travel. About 1 mile of existing vehicular ways within the wilderness portion would no longer be available for vehicular use except for purposes identified under the All Wilderness Alternative.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 9,620-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products in the wilderness area would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if

accomplished by other than mechanical means. The area not designated wilderness would be open to woodland harvest.

- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The area not designated as wilderness would be managed as Class II (7,700 acres), III (1,940 acres), and IV (16,624 acres) as currently set forth in the Escalante MFP.
- Within the wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to hand or aerial means. In the area not designated, measures of control would be taken without wilderness considerations.
- In the nonwilderness area, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the wilderness area, such activity would be allowed by permit if compatible with wilderness preservation. Activities would be limited to those conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the nonwilderness area hunting would be allowed subject to applicable State and Federal laws and regulations. In the wilderness area, use would be allowed subject to applicable laws and regulations but would be limited to nonmotorized means.
- In the nonwilderness area, control of predators would be allowed on a case-by-case basis to protect threatened or endangered wildlife species or to prevent special and serious losses of domestic livestock. In the wilderness area, control of predators would be allowed for the same purposes, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes the main environmental impacts that would result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The Scorpion WSA and surrounding area, including Glen Canyon NRA, have been designated Prevention of Significant Deterioration (PSD) Class II air quality as per the 1977 Clean Air Act amendments. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendation. Air quality reclassification is the prerogative of the State government, not of the BLM (USDI, BLM, 1982b).

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit; however, data collected from various sites (Page, Arizona and Four Mile Bench) indicate the air is generally free of pollutants and within National Ambient Air Quality standards and State regulations. The WSA is not visible from any high-use areas.

Geology

The Scorpion WSA lies within the Canyonlands section of the Colorado Physiographic Province (Thornbury, 1965). Deep canyons are more common in this province than any other area of the United States.

Elevations in the WSA range from approximately 5,600 feet on a bench in the extreme northern part of the tract to about 4,400 feet at the bottom of Dry Fork Coyote Gulch in the southern part of the tract.

The major drainages in the WSA are Twenty-Five Mile Wash, which extends from west to east through the northern portion of the tract, and Dry Fork Coyote Gulch, which runs northwest to southeast through the southern portion of the unit. Numerous other drainages within the area flow into these drainages which, in turn, flow into the Escalante River east of the WSA.

Long narrow winding canyons (Spooky Gulch and Brimstone Gulch), benches, and flats cutting into Mesozoic sedimentary rocks are the major landforms in the area. Twenty-Five Mile Wash is entrenched in a large basin below the Allen Dump cliffline and the Early Weed Bench-Scorpion cliffline.

Rocks of Jurassic Age totalling about 2,000 feet in thickness and thin deposits of Quaternary Age outcrop occur in the WSA. The underlying Mesozoic and Paleozoic rocks in the region are more than 4,000 feet thick (Weir and Lane, 1981). Crossbedded Navajo Sandstone forms the most extensive outcrop. Younger units are exposed along the western boundary of the WSA. The dominant structures consist of a north-south trending syncline and the north-south trending Collet anticline, the axes of which are located about 1 mile and 5 miles west of the WSA, respectively.

Soils

The major soil associations in the WSA are the light-colored soils of valleys, terraces, and mesas. They are deep soils (fine sandy loam) which occur in the Scorpion Flat area and adjacent to the Dry Fork of Coyote Gulch. Runoff is medium to rapid and sediment production is moderate to low (USDI, BLM, 1979a).

Highly erodible soils occur on the western end of the WSA (approximately 1,450 acres) which is severely dissected with stream channels. These highly erodible soils are silt loams that are of moderate depth and have a high surface runoff and sediment production (1.0 to 3.0 acre-feet per square mile per year). Twenty percent of the soil associations consist of badland and rock outcrop. Outcrops are mainly sandstone bedrock. Most erosion problems are due to geologic rather than man-caused erosion.

Rockland areas consist of exposures of bare bedrock, mostly sandstone and limestone, with gentle to steep slopes. Rockland areas occur north of Twenty-Five Mile Wash. The rockland grouping has very little vegetation with native vegetation growing in crevices and pockets of soil.

Sandy deep soils occur along the Dry Fork of Coyote Gulch. Runoff and sediment production from these soils are low. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

SCORPION WSA

**TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
SCORPION WSA**

Resource	Alternatives		
	No Action	All Wilderness (35,884 Acres)	Partial Wilderness Designation (9,620 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 6,900 tons of uranium oxide.	Oil and natural gas likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. Due to the low likelihood of recovery of these minerals, however, the loss of development opportunity would not be significant.	Although likelihood is low, up to 2 million barrels of oil, 13 billion cubic feet of natural gas, and 4,950 tons of uranium oxide could be recovered.
Wildlife	Less than 0.5 percent of the WSA would be directly affected by mineral and energy development which could adversely affect wildlife on the disturbed areas. Water developments could improve wildlife habitat; however, none are proposed.	Wildlife would benefit from solitude. However, if future water improvements were curtailed, potential wildlife habitat would be reduced.	Wildlife in the designated portion would benefit from solitude. Less than 1 percent of the nondesignated portion could be disturbed by mineral and energy exploration and development, which could adversely affect wildlife habitat.
Livestock	Grazing of 2,496 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of .75 mile of fence, pipeline, storage tank, and trough, could be constructed.	Grazing of 2,496 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. Proposed new developments may not be allowed.	There would be no significant difference from the All Wilderness Alternative.
Visual Resources	The quality of visual resources could be impaired on up to 200 acres.	Visual quality could be impaired on 40 acres.	Visual quality could be impaired on 160 acres (including 10 acres in the designated portion).
Recreation	ORV use would continue on 4 miles of ways at current low levels. Overall recreational use could increase from the current 175 visitor days per year to 261 over the next 20 years. Up to 200 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 4 miles of ways, would be closed to ORV recreational use. Primitive recreation would increase by an undetermined amount due to publicity associated with wilderness designation.	ORV recreational use could continue on 3 miles of ways in the undesignated portion.

SCORPION WSA

**TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
SCORPION WSA**

Resource	Alternatives		
	No Action	All Wilderness (35,884 Acres)	Partial Wilderness Designation (9,620 Acres) (Proposed Action)
Wilderness Values	Wilderness values could be lost on up to 200 acres (0.6 percent of the WSA), but the values in the WSA as a whole would not be affected.	Wilderness values would be protected, except on up to 40 acres that may be disturbed under valid existing mineral rights.	Wilderness values would be protected, except on up to 10 acres disturbed under valid existing rights. Slight impairment would be expected on the 26,264-acre area not designated. Overall, wilderness values could be lost on 0.4 percent of the WSA. However, 27 percent of the area meeting the standards for naturalness, 73 percent of the area meeting the standards for outstanding opportunities for solitude, and 64 percent of the area meeting the standards for outstanding opportunities for primitive recreation would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Kane</i> and <i>Garfield County Master Plans</i> , BLM Escalante MFP, State of Utah plans and policies, and NPS proposal to acquire parts of Twenty-five Mile Wash and Coyote Gulch for use as an access corridor. It would not complement the NPS proposal for wilderness designation for the adjacent area.	Designation would not be consistent with county concepts of multiple use. Exchange of State lands following designation would be consistent with State plans. Designation would constitute an amendment to the Escalante MFP. This alternative would complement the NPS wilderness proposal in Glen Canyon NRA but could conflict with the proposal for acquiring part of the area for use as an access corridor.	Partial designation would be the same as the All Wilderness Alternative, except that nondesignation of the southern portion would not be consistent with the Glen Canyon NRA wilderness proposal.
Socio-economics	Annual local sales of less than \$50,638 and Federal revenues of up to \$94,604 would continue.	Annual local sales of less than \$50,638 and Federal revenues of up to \$3,494 would continue, but Federal revenues of up to \$91,110 from mineral leasing would be foregone. Opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$28,260 per year.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	1,795	5	4,850
Moderate	1.3	26,909	75	34,982
Slight	0.6	0	0	0
Stable	0.3	7,180	20	2,150
Total		35,900	100	41,982

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

The current major vegetation type is desert shrub. Major species in this type are juniper, sandsage, Brigham tea, Indian ricegrass, and sand dropseed. Approximately 2,788 acres of the WSA are primarily slickrock and support very sparse vegetation. Riparian (2 acres) vegetation exists along Twenty-Five Mile Wash. No threatened, endangered, or sensitive plants or species under review for threatened or endangered status are known to exist in the WSA.

The Scorpion WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) types of the WSA are juniper-pinyon woodland and galleta-threawn shrubsteppe. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The WSA contains six undeveloped springs and one perennial stream (6 miles), Twenty-Five Mile Wash. Other major drainages in which water flows intermittently are the Dry Fork of the Coyote Gulch and Brimstone Gulch (USDI, BLM 1979a). Flash floods are common in these washes from July through mid-September during the thunderstorm season. The most prevalent water quality problem results from suspended sediment, a direct result of flooding. Primary water uses are for livestock and wildlife.

Water rights within the WSA boundaries total 103.94 acre-feet annually. This water is allocated

to the BLM for livestock watering. No water rights in the WSA have been allocated to individuals or the State of Utah (Utah Division of Water Resources, 1969).

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 2- was assigned to the Scorpion WSA by SAI (1982). The overall importance rating is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

The energy and mineral resource rating summary is given in Table 3.

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f4	c4	Approximately 6,400 tons of (17 percent) uranium oxide
Uranium	f2	c3	Little less than 500 tons of (83 percent) uranium oxide
Coal	f1	c4	None
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Silver	f2	c1	Little to none

Source: SAI, 1982.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the

Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

LEASABLE MINERALS

Oil and Gas

According to SAI (1982) the Scorpion WSA is considered to have potential for only small, widely scattered oil and gas fields. Such fields in Utah typically have an areal extent of about 2,500 acres and require about 150 acres for roads, pads, etc. This is largely due to the relatively thin stratigraphic sequence, which generally limits the volume of both favorable source and reservoir rocks, and to the tendency for medium-sized or large accumulations to have been destroyed or reduced in size by recent tectonic events or water flushing. The size of reserve hydrocarbon accumulations in such an environment would be anticipated to be less than 10 million barrels of oil or, if gas, no more than 60 billion cubic feet (SAI, 1982).

Although the potential exists for oil and gas to occur in traps within the tract (e.g., stratigraphic and paleogeomorphic traps), the highest favorability is associated with the east limb of the Collet anticline. Oil shows were reported (Kunkel, 1965) in the Permian Kaibab Formation for a well on the Collet anticline about 15 miles northwest of the WSA. Since only a portion of the east limb of the Collet anticline is within the WSA and the closure is considerably less than on the oil-producing Upper Valley anticline (Irwin, 1976), the oil and gas favorability of the Collet anticline from a structural standpoint is substantially lower than the Upper Valley anticline. In 1960, another well was drilled approximately 5 miles south of the southern boundary of the tract (Kunkel, 1965). The well bottomed in Devonian rocks and no oil shows were reported. Based on this nearby well, the lack of obvious structural traps and the unsuccessful record of oil and gas exploration to

date within the region, the oil and gas potential of the unit is considered low. SAI (1982) considers the oil and gas favorability limited to small fields (f2) with a low certainty of occurrence (c1).

Under the current land use plan, all of the acreage within the unit is open to oil and gas leasing subject to the standard use and wilderness stipulations.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease developments.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases that are producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

At the present time there are 21 oil and gas leases covering 30,370 acres in the WSA. All of these are post-FLPMA leases. Expired leases account for 3,005 acres that cannot be leased again under a regular noncompetitive offer; however, they may be offered later under the noncompetitive simultaneous filings held by the BLM. An additional 2,509 acres are presently unleased but will remain available for leasing.

Coal

The WSA lies a few miles east of the Kaiparowits Coal Field. All coal-bearing rocks in the field, as well as all other fields in southern Utah, are of Cretaceous Age. No other coal-bearing rocks with commercial potential are known in southern Utah (Doelling and Graham, 1972).

The WSA is underlain by Triassic and Jurassic rocks. Because these rocks are not coal-bearing anywhere in the region and Cretaceous units have been removed by erosion, no potential for coal resources of commercial quantity exists in this area. Therefore, the SAI (1982) rating for favorability of coal is low (f1) with a high certainty (c4) that the resource does not exist. There are no coal leases.

Geothermal

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks occur within or near the WSA. The closest thermal spring is approximately 40 miles to the northeast in Red Canyon, and it discharges at a temperature of only 20 degrees Centigrade (C.) (SAI, 1982). Therefore, favorability of occurrence is low (f1) and certainty is high (c3) that resources do not exist within the WSA.

Hydroelectric

The Scorpion WSA contains no potential hydroelectric sites. SAI (1982) has rated the area as having a low favorability for occurrence (f1) and a high certainty (c4) that this resource does not occur.

LOCATABLE MINERALS

No claims or prospects are known to exist in this WSA.

Uranium

According to the U.S. DOE (1983) about 6,080 acres (17 percent of the WSA) in the eastern portion of the WSA lie within a 1,126-square-mile area considered to have a high certainty (c4) for the occurrence of large deposits of uranium (f4). This area is identified by the U.S. DOE as the Greater Circle Cliffs probable resource area. The 6,080 acres of probable resource area within the WSA account for less than 1 percent of the total probable resource area. The remainder of the WSA is considered by the U.S. DOE (1983) to be in an area favorable for small deposits of uranium (f2/c3).

Probable resource areas are defined by the U.S. DOE as those areas where potential resources are estimated to occur in known productive uranium areas either in extensions of known deposits or in undiscovered deposits within geologic trends or areas of mineralization. The U.S. DOE (1983) has estimated that the Greater Circle Cliffs probable resource area has a 50-percent probability to con-

tain about 6,400 tons of uranium oxide (at a minimum grade of .01 percent). The areal extent of such a deposit, based on the .01-percent minimum grade and an average thickness of 5 meters, is estimated to be approximately 1,200 acres. Any mining would be by underground methods. The area assigned a f2 rating could contain up to 500 tons of uranium oxide at a forward cost of \$100/lb. The areal extent of this deposit probably would not exceed 180 acres. Any mining operation in the WSA would be by underground methods. No mining claims occur within the WSA.

Gypsum

A small gypsum deposit of unknown quality and quantity outcrops in the northeast portion of the WSA. This deposit is presently unclaimed and is inferred to occur over a large area outside the WSA.

SALABLE MINERALS

Stream gravel and other loose rock material that could be used for construction occur within the tract. These deposits are not unique or economically significant due to the presence of ample similar materials nearby the WSA.

Wildlife

The Scorpion WSA has habitat that could support approximately 50 species of mammals, 170 species of birds, 17 species of reptiles, and five species of amphibians. Birds are mainly seasonal residents or migrants while the other species are primarily residents.

The WSA provides yearlong range for mule deer; however, deer populations are extremely low. Riparian areas are the most important use areas for the resident population.

Cougar are present throughout the WSA in small numbers. A few may be resident, but the majority are winter visitors. Cougars occur in the pinyon-juniper and riparian habitats as well as rocky and cliff areas, usually in close proximity to areas occupied by mule deer.

Two endangered species, peregrine falcon (*Falco peregrinus*) and bald eagle (*Haliaeetus leucocephalus*), are rare migrants and possibly winter visitors of the WSA. A peregrine falcon was seen along the Escalante River above Harris Wash in Glen Canyon NRA during April 1978. Bald eagles commonly winter on Lake Powell at the mouth of the Escalante River and may occasionally move up the river in the WSA.

At least seven other raptors are known to nest in the WSA, including the golden eagle, but only the

American kestrel could be considered common. The Utah Division of Wildlife Resources (UDWR, 1982) list of sensitive species includes three species that occur occasionally within the WSA: Lewis woodpecker and western and mountain bluebirds. No other threatened, endangered, or sensitive animal species are known to exist within the WSA.

No critical habitat has been identified in the WSA. No wildlife habitat plans or wildlife projects have been developed within the WSA and none have been proposed, nor has a treatment plan been identified.

Forest Resources

No significant forest resources occur in the WSA. The entire WSA is open to the collection of fuelwood but, due to the remoteness of the area and sparse vegetation, current use is nonexistent. The WSA has no treatment potential and quantity has not been assessed.

Livestock and Wild Horses/Burros

The WSA encompasses portions of four livestock grazing (cattle) allotments. Tables 4 and 5 summarize livestock use and existing and proposed range improvements in the WSA. There are no wild horses or burros within the WSA.

TABLE 4
Livestock Grazing Use Data

Allotment	Total Acres	Suitable/Unsuitable Acres in WSA ¹			AUM Grazing Preference in WSA	Livestock Permittees Using WSA
		WSA	WSA ¹	WSA ¹		
Lower Cattle	83,049	23,767	18,664	5,103	1,546	7
Upper Cattle	129,391	844	799	45	63	12
Chimney Rock	34,361	6,163	6,163	0	725	1
Escalante River	75,209	5,110	4,808	302	162	1
Total		35,884	30,434	4,550	2,496	21

Source: USDI, BLM, 1979a.

¹ The suitability of an area for grazing is determined by a number of factors including steepness of terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available feed is not allocated for domestic livestock grazing.

Visual Resources

The BLM visual resource inventory classified approximately 400 acres of the WSA as Class A, 29,384 acres as Class B, and 6,100 acres as Class

TABLE 5
Existing and Proposed Range Improvements

Allotment	Existing Improvements	Proposed Improvements
Lower Cattle	None	.75 mile of fence, pipeline storage tank, trough
Upper Cattle	None	None
Chimney Rock	.9 mile of fence	None
Escalante River	.3 mile of fence	None

Source: USDI, BLM, 1979a.

C scenery. VRM class ratings within the WSA are: Class II, 7,700 acres; Class III, 3,200 acres; and Class IV, 24,984 acres (refer to Appendix 7 for more detail on the VRM system). In the Glen Canyon NRA Wilderness Proposal, the NPS assigned a Value Class of I (highest) to Twenty-Five Mile Wash. A Value Class of III (next to lowest) was assigned to the NRA portion of the Scorpion. For a discussion of the scenic values in the WSA, refer to the Special Features, Wilderness Values, Affected Environment section.

Cultural Resources

Based on archaeological surveys (USDI, BLM, 1978a), site densities on approximately 9,500 acres of the WSA are medium (11 to 49 sites per 23,000 acres) and low (1 to 10 sites per 23,000 acres) on approximately 26,400 acres. Approximately 20 archaeological sites, including occupation sites, campsites, and pictographs, have been identified in the WSA. It is not known if any of the sites are of National Register quality.

Recreation

The entire WSA is open to ORV use. Although the present ORV use of the WSA is essentially nonexistent, much of the Scorpion Flat area is negotiable by ORVs and represents a potential motorized recreation resource. The Escalante Planning Unit MFP recommends the closure of 780 acres in the Dry Fork of Coyote Gulch and 960 acres in Twenty-Five Mile Wash if it becomes necessary to protect these canyons.

The current nonmotorized use of the WSA is also low. Most of this use is associated with the Dry Fork of Coyote Gulch and Twenty-Five Mile Wash drainages which provide access to the Escalante River in the Glen Canyon NRA. Trailheads for these access routes are located at the intersection of the Dry Fork of Coyote Gulch and the Hole-in-the-Rock Road and at the intersection of the

Egypt Road and Twenty-Five Mile Wash. The National Park Service (NPS) has indicated it would be in the best interest of the Department of the Interior to designate these canyons as “non-wilderness corridors.” NPS has proposed exchanges with BLM for establishing trailheads at these canyon entrances to the Escalante River. The proposal does not envision these additions as wilderness but rather as recreation and resource utilization zones where necessary development might take place.

Two other trailheads and access routes to the Escalante River are located in the WSA. A trailhead at the terminus of the Egypt Road leads to the Escalante River via Fence Canyon. Approximately .25 mile of this route within the WSA has been “cherry-stemmed.” The Early Weed Bench roadhead also is used to provide access to Scorpion Gulch and Fools Canyon in Glen Canyon NRA. The access routes are across the Scorpion Flat area of the WSA. It is estimated that the WSA receives 175 visitor days per year. ORV use accounts for 25 visitor days and back country use accounts for 150 visitor days.

If primitive recreation use levels do increase within the WSA, most of the use would probably be the WSA’s access routes to the Escalante River destinations in the Glen Canyon NRA. Some increase in day use of the short slot canyons at the head of the Dry Fork such as Spooky Gulch can also be expected. However, use of the remainder of the WSA as a destination backpacking area will probably continue to remain low.

Wilderness Values

SIZE

The WSA is 35,884 acres and is approximately 13 miles wide and 13 miles long. It consists of two separate blocks of land connected at their southeast and northwest corners.

NATURALNESS

Imprints of man within the WSA include 4 miles of ways, a fence across Twenty-Five Mile Wash, a fence above the Dry Fork of Coyote Gulch, and a fence in the Dry Fork below Brimstone Gulch. These imprints combined involve about 8 acres or less than 1 percent of the WSA.

In the Scorpion WSA, the high naturalness quality has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b) decision. No additional imprints have occurred in the WSA as a result of impairing uses or activities allowed under the BLM’s *Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

The opportunity for solitude is dependent on topographic screening influences rather than vegetation screening or combinations of vegetation and topographic screening. Narrow and winding canyons (56 miles within the WSA) are the major topographic influences on the solitude opportunity. Twenty-Five Mile Wash and its side canyons, the Dry Fork of Coyote Gulch and especially its narrows, and the side canyons to the Dry Fork of Coyote Gulch, are narrow and winding canyons that provide opportunities for solitude.

The Twenty-Five Mile Wash portion of the WSA includes a large slickrock basin defined by the cliffs. This basin topographical configuration enhances the opportunity for visitors to find isolation and seclusion. The other factor identified as contributing to the opportunity for solitude is the broken topography of the Scorpion area. Areas containing opportunities for solitude within the WSA aggregate approximately 9,700 acres. Areas within the WSA that exhibit no opportunity for solitude include the Big Hollow Wash and Black Ridge areas southwest of the Dry Fork of Coyote Gulch, Early Weed Bench, and Allen Dump. Approximately 73 percent of the WSA (26,184 acres) lacks the outstanding opportunity for solitude.

The Scorpion area is a relatively flat, undifferentiated, and sparsely vegetated flat extending to the rim of the Escalante River Canyon. The Scorpion landscape consists of broken patchwork patterns of sand and slickrock. About 14,700 acres of the Scorpion are within the WSA. The remainder is within the boundaries of the Glen Canyon NRA. Because the terrain is not exceptionally difficult or rough, it exhibits only mediocre topographic screening situations that would provide little opportunity for solitude and are not considered outstanding.

The tributaries to Twenty-Five Mile Wash and the Dry Fork of Coyote Gulch exhibit concentrations of deep slots that are not equaled elsewhere in the Escalante River drainage. The main stream channel of Twenty-Five Mile Wash is entrenched and sinuous along its entire length. Thus, all of the Twenty-Five Mile Wash canyon exhibits an outstanding opportunity for solitude.

PRIMITIVE AND UNCONFINED RECREATION

The WSA offers outstanding opportunities for backpacking, horseback riding, hiking, sightseeing, and photography. Thus, the outstanding opportunities for primitive and unconfined recreation in the WSA are derivative of the individual quality of several activities rather than the presence of a wide spectrum of activities.

The dayhiking activity is often associated with the sightseeing and photography activities. The narrow tributary canyons and intervening slickrock areas of Twenty-five Mile Wash; the tributary canyons to the Dry Fork of Coyote Gulch, such as Spooky Gulch and Brimstone Gulch; portions of upper Brimstone Gulch; and various sections of the Dry Fork exhibit some unique and highly aesthetic landscapes. These canyons are intriguing and provide challenging photographic subjects. Because they are so narrow and tortuous, they are ideal canyons for an exploratory type of hiking. The area within the WSA possessing high quality hiking opportunity totals approximately 6,200 acres.

The backpacking and horseback riding activities occur in the same areas of the WSA. In most cases, these two activities are related to overnight or longer trips into the Glen Canyon NRA where the Escalante River and Coyote Gulch Canyons are backpacking-horseback riding destinations. The Twenty-Five Mile Wash Canyon provides direct access to the Escalante River. The Egypt slickrock area provides access to the river via Fence Canyon from the roadhead at the Allen Dump promontory. In both cases, the routes through the WSA possess high quality photographic-sightseeing attributes and the routes themselves provide quality backpacking-horseback riding experiences. The tributary canyon to Twenty-Five Mile Wash near the Glen Canyon NRA in Sections 24 and 25 could be considered a destination within the WSA for overnight foot or horseback trips.

The other area having outstanding backpacking-horseback riding activity opportunity in the WSA occurs in the Dry Fork of Coyote Gulch. The Dry Fork provides backpacking access to Coyote Gulch and the Escalante River. As does the Twenty-Five Mile Wash Canyon, the Dry Fork represents a quality activity experience as well as access to destinations in the NRA. The sightseeing and photographic opportunities in the Dry Fork of Coyote Gulch are of high quality. The area within the WSA possessing high quality backpacking or horseback opportunities aggregates approximately 1,200 acres.

Sightseeing and photographic activities are of outstanding quality in the Twenty-Five Mile Wash drainage in areas where the backpacking, horseback riding, and hiking opportunities lack outstanding qualities. The upper Twenty-Five Mile Wash drainage area exhibits the largest expanse of exposed Navajo Sandstone slickrock in the middle Escalante River drainage. This basin of slickrock is a photographic subject and sightsee-

ing objective of superior quality. Approximately 4,400 acres contribute to these opportunities. The total acreage providing outstanding opportunities for primitive and unconfined recreation is 11,400 acres, while 24,484 acres do not meet the standard.

SPECIAL FEATURES

The Scorpion WSA contains several landscapes that possess scenic values. These are landscapes characteristic of the scenic geology of the Escalante River basin.

The Twenty-Five Mile Wash Canyon and one tributary canyon are entrenched and meandering. They are cut into red Navajo Sandstone and possess a riparian vegetative system. These are the ingredients of color contrast and form which contribute to one of the classic scenic amenities of the Glen Canyon-Escalante Canyon region. The canyon is a typical example of the western tributary canyons to the Escalante River from Davis Gulch to Harris Wash.

Twenty-Five Mile Wash is entrenched in a large basin or bowl below the Allen Dump cliffline and the Early Weed Bench-Scorpion cliffline. This physiographic feature is of esthetic value because it is composed almost entirely of exposed slickrock. It represents the largest rock exposure of this type on the west side of the Escalante River below Highway 12. Certain areas of this slickrock exhibit parallel cracks, small domes, and winding slots that enhance its scenic value.

The Dry Fork of Coyote Gulch Canyon is an unusual landscape feature because it is one of the few major western drainages to the Escalante River lacking riparian vegetation. The Dry Fork landscape consists of a shallow, winding canyon containing dune areas and several narrows. Although this landscape is of scenic value, it lacks the exceptional esthetic value of other Escalante drainage canyons that do exhibit the "green ribbon in red rock" amenity. The scenic values in this canyon are decidedly inferior to those found downstream in the main stem Coyote Gulch Canyon. A feature that enhances the scenic value of the Dry Fork of Coyote Gulch is the several extremely narrow and tortuous side canyons. Spooky Gulch and Brimstone Gulch are named examples.

The remaining WSA landscape of scenic merit is the upper Brimstone Gulch-Cat Pasture area below Early Weed Bench. This is an intricate and dissected area of colorful slickrock domes, short box canyons, and small buttes. This is a small area with impressive scenic values. The aggregate area of scenic values is about 11,100 acres.

Land Use Plans and Controls

Federal lands in the WSA are being managed according to the land use decisions of the Escalante Planning Unit MFP (USDI, BLM, 1981a). Principle uses are recreation and grazing. Two sections of State land (1,280 acres) are enclosed within the boundaries of the WSA. There are no rights-of-way within the WSA nor are there private lands (surface or subsurface) within the WSA.

The General Management Plan for Glen Canyon NRA (USDI, NPS, 1979) identifies the area adjacent to the WSA as a natural zone. The natural zone includes the recreation area's outstanding scenic resources, relatively undisturbed areas isolated and remote from the activities of man and areas bordering on places with established land use practices complementary to those of the natural zone. This natural zone is precisely congruent with the NPS wilderness recommendation (USDI, NPS, 1979). The Glen Canyon NRA Management Plan also proposes a boundary adjustment with the BLM to add land in Twenty-Five Mile Wash and Coyote Gulch to the NRA for use as an access corridor. The NPS proposes this addition as a recreation and resource utilization zone where necessary development might take place.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers portions of this WSA. The Master Plan recognizes that the county possesses "... Some of the most spectacular scenery in the United States. . . . The County is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,000 acres in one Forest Service unit be recommended for wilderness. The Master Plan recommends that the remaining lands within the county, including the 9,631 acres in the WSA, be retained for multiple uses. The Plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) identifies the land in the WSA (26,253 acres) as open range. Kane County's Master Plan is opposed to all wilderness designation.

Socioeconomics

The Scorpion WSA is located in both Garfield and Kane Counties, Utah. However, the primary area of economic impact is identified as Garfield

County, Utah. Within this region expected impacts would be focused within the municipality of Escalante, which is located approximately 25 road miles north of the WSA.

DEMOGRAPHICS

Garfield is a rural county having average population densities of less than one person per square mile. This density is very low when compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in this county (3,673 persons) is concentrated in small communities rather than being evenly distributed throughout the area.

EMPLOYMENT

The economy of Garfield County is dominated by the government sector in terms of employment (USDC, Bureau of Economic Analysis, 1982). The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (13 percent), and services (13 percent). Table 6 presents employment and personal income data for Garfield County.

TABLE 6
Employment and Personal Income
Garfield County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	2,143	24,792
Proprietors	349	2,637
Farm Proprietors	209	807
Nonfarm Proprietors	140	1,830
By Industry Source	—	—
Farm	27	949
Nonfarm	1,767	23,843
Private	1,332	19,049
Ag. Serv., For., Fish., and Other	(L)	79
Mining	208	4,222
Construction	379	5,536
Manufacturing	247	3,294
Nondurable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	84	1,545
Wholesale Trade	(L)	96
Retail Trade	126	1,302
Finance, Insurance, and Real Estate	16	189
Services	270	2,786
Government and Government Enterprises	435	4,794
Federal, Civilian	140	1,656
Federal, Military	24	64
State and Local	271	3,074

Source: USDC, Bureau of Economic Analysis, 1982

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the employment and income in the area is based in the agriculture and services sectors. This is based on the available county-wide data (USDC, Bureau of Economic Analysis, 1982; Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

The community of Escalante lies along Utah Highway 12, the major access route to the Scorpion WSA. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is a gateway and service area for visitors to the Scorpion WSA.

INCOME AND REVENUES

Economic-related activities in the WSA include livestock production and recreation. Table 7 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 7
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$91,110
Mineral Production	0	0
Livestock Grazing	\$49,920	\$3,494
Woodland Products	0	0
Recreational Use	Less than \$718	0
Total	Less than \$50,638	Up to \$94,604

Sources: BLM File Data; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

No oil and gas or minerals have been produced in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Twenty-one livestock operators have a total grazing privilege of 2,496 AUMS within the WSA. If all

this forage were utilized, it would account for \$49,920 of livestock sales and \$12,480 of ranchers' returns to labor and investment.

The WSA's motorized and nonmotorized recreational use is low. Related local expenditures are low and insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the Scorpion WSA is estimated as about 175 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Kane and Garfield Counties.

The WSA generates Federal revenues from two sources: mineral leases and recreation (refer to Table 7).

Oil and gas leases in the WSA cover approximately 30,370 acres. At up to \$3 per acre, lease rental fees generate up to \$91,110 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA, are unknown; however, the permittees in the WSA can use up to 2,496 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$3,494 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.

3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.

4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.

5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without control for wilderness protection. The degree of future development is unknown, but would probably be low. This would be due to the WSA's rough terrain and low resource potential. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: oil and gas, 160 acres, and uranium, 40 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If oil and gas and uranium are developed, air quality could be reduced up to the PSD Class II limitation. Disturbance of 200 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with uranium and oil and gas exploration and development activities would probably not exceed 200 acres. This would not significantly affect geology.

SOILS

It is estimated that up to 200 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 200 acres would increase from 540 cubic yards/year to 1,080 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 540 cubic yards (1 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible.

VEGETATION

The anticipated maximum of 200 acres disturbed would not significantly impact the WSA's sparse vegetation.

WATER RESOURCES

Since precipitation is low and all but one stream is ephemeral within the WSA, no significant sedimentation or change in total dissolved solids is expected to occur from the 540 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Escalante Planning Unit.

Mineral exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and would not significantly impact ground water quality or quantity.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of

surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected under this alternative.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potentially recoverable deposit of up to 6,400 tons of uranium oxide on 17 percent of the area and up to 500 tons of uranium oxide in 83 percent of the area could be developed. Approximately 40 acres could be disturbed due to exploration and development of uranium. However, the likelihood of development is thought to be minimal because of economic considerations (e.g., transportation, poor markets, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the availability of water through the construction of a pipeline, storage tank, and trough. Disturbance of an estimated 200 acres (0.5 percent of the WSA) through mineral and energy development and exploration would disrupt wildlife. Deer, pronghorn antelope, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Lewis woodpecker and western and mountain blue birds would also avoid the disturbed areas.

FOREST RESOURCES

Since there are few trees other than scattered pinyon and juniper, none of which are utilized (except by occasional campers or hikers) and since minimal surface-disturbing activities are anticipated, no significant impacts to forest resources are expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante MFP. The 2,496 AUMs currently allocated in the WSA are controlled by 21 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA, few, if any, changes in livestock management techniques are expected. The proposed .75 mile of fence, pipeline, storage tank, and trough could be developed and would result in improved livestock distribution.

VISUAL RESOURCES

Under this alternative, visual quality in the WSA would receive some protection by limitations placed on potential surface-disturbing activities (i.e., 7,700 acres would be managed under VRM Class II objectives requiring that activities not be apparent).

However, under this alternative 200 acres of mineral-related exploration and development are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in VRM Class II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole. Much of the area is managed under VRM Class III (3,200 acres) and Class IV (24,984 acres) which offer little protection for natural aesthetic values.

CULTURAL RESOURCES

The cultural resources in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 200 acres by mineral exploration and development under this alternative could affect archaeological sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

Up to 200 acres could be disturbed by mineral and energy activities. Primitive recreational opportunities could be diminished on the affected areas. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created by mineral exploration and development would improve access into the area for nonprimitive recreation.

The future increase in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor Recreation

Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 175 current visitor days per year to 261 at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreational uses in the WSA, primitive recreational use would increase from the estimated current use of 150 visitor days per year to about 224 per year over the next 20 years. ORV play activity would increase from 25 visitor days per year to 37 per year.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante MFP. Expected mineral and energy exploration and development could disturb an estimated 200 acres. Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) could be lost or diminished in affected areas. Impacts to these values probably would not be significant due to the limited surface disturbance anticipated. However, the 200 acres of mineral-related surface disturbance could result in significant losses of naturalness and solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Kane and Garfield County Master Plans* which recommend multiple use but it would not complement the NPS proposal of wilderness designation for the adjacent area because the WSA would not be recommended as wilderness. However, nondesignation would be consistent with the NPS proposal to acquire parts of Twenty-Five Mile Wash and Coyote Gulch for use as an access corridor. This alternative is based on implementation of the current BLM Escalante MFP and is, therefore, in conformance with it. The No Action Alternative would be consistent with State of Utah plans and policies which emphasize economic return.

SOCIOECONOMICS

Under this alternative, no changes are expected in existing patterns and trends of population, employment, and local income distributions. Economic development of resources in the WSA would not be affected.

There would not be a loss of local employment or income as a result of this alternative. The existing

ability to explore and develop mineral resources would remain as at present. If mining claims were established, a portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the uranium and oil and gas in the WSA were developed, it would lead to increases in employment and income for Garfield and Kane Counties. However, the probability of economic development of minerals within the WSA is low.

There would be no livestock-related economic losses because the existing grazing use (2,496 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$49,920 annually in livestock sales and \$12,840 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase 86 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 5,514 acres in the WSA open to lease that are currently not leased. If leased, they would bring up to \$16,542 additional Federal lease fee revenues per year in addition to new royalties from lease production. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$2,375 per year) would continue.

All Wilderness Alternative (35,884 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 35,884-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 4 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that min-

ing claims would be located before wilderness designation and would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (40 vs. 200 acres), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant, as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Approximately 30,370 acres are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas with 3 million barrels of oil and 18 billion cubic feet of natural gas that are recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Locatable Minerals

There are presently no mining claims in the WSA; however, claims could be located up to the time of designation. Up to 6,400 tons of uranium oxide in 17 percent of the area and up to 500 tons of uranium oxide in 83 percent of the area could occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines.

The worst-case impact to mineral development would occur if the potentially recoverable minerals are not within mining claims filed before designation and the potential for recovery of the uranium oxide foregone.

It is estimated that, if uranium deposits are located prior to designation, up to 40 acres could be disturbed due to exploration of uranium. Because production of this metal is not currently occurring and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of recoverable uranium.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However, water is a limiting factor for wildlife in this WSA. If future water improvements were curtailed and the pipeline and trough not constructed, potential wildlife habitat could be reduced.

In addition, disturbance due to exploration of locatable mineral resources could disrupt wildlife populations and result in these species leaving the area.

The occasional presence of Lewis woodpecker and western and mountain blue birds would remain in the WSA, except in areas of mineral disturbance.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante MFP. The 2,496 AUMs currently allocated in the WSA are controlled by 21 livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. In the case of the .75 mile of fence, pipeline, storage tank, and trough proposed, which of these would be allowed, if any, is unknown since each would be considered on a case-by-case basis.

VISUAL RESOURCES

Wilderness designation would contribute to the

preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative, mineral-related surface disturbance would be reduced from 200 acres to 40 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low in part of the WSA and high in other parts, visual quality could be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 175 visitor days a year), the WSA has outstanding primitive recreational values. If designated, those high quality recreational opportunities would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA likely following wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Considering this WSA's high wilderness quality and proximity to the Glen Canyon NRA, use could be higher than the 2-percent projection. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use. However, due to the size and configuration of the WSA, the

quality of the primitive recreation experience probably would not be negatively affected by the increased use. The 37 visitor days of ORV play activity and vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA. Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA. Approximately 4 miles of ways within the WSA would be closed to ORV use. As recreation use increased, commercial operations based on primitive recreational activities could apply for use of the WSA.

Mineral-related surface disturbance on up to 40 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

It is concluded that this alternative could benefit primitive recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values.

WILDERNESS VALUES

Wilderness designation would contribute to the preservation of the area's wilderness values. Under this alternative, the potential for surface-disturbing activities that could impair wilderness values would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through the ORV closure, and through closure of the entire area to future mineral leasing and location.

Designation and management of all 35,884 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive, unconfined recreation. Solitude would be preserved on approximately 9,700 acres that meet and 26,184 acres that do not meet the standards for outstanding solitude. Naturalness would be preserved on all 35,884 acres, and primitive and unconfined recreation would be preserved on 11,400 acres that meet and 24,484 acres that do not meet the standards for outstanding opportunities. The scenic special features in this WSA would also be protected and preserved.

No development of leases is foreseen under this alternative. The anticipated mineral-related sur-

face disturbance would, therefore, be reduced from 200 acres to 40 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of solitude and naturalness.

Outstanding opportunities for five recreational activities (backpacking, hiking, horseback riding, photography, and scenic sightseeing) would be preserved. Although recreational use could increase, use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreational values would be expected.

Thus, it is concluded that wilderness designation and management of all 35,884 acres of the Scorpion WSA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude and primitive recreation except in localized areas affected by the surface disturbance related to mineral exploration. In the area as a whole, however, no significant loss of wilderness values would be expected.

LAND USE PLANS AND CONTROLS

This alternative would complement the NPS wilderness proposal in Glen Canyon NRA. However, it could conflict with the NPS proposal for acquiring part of the area for use as an access corridor. The existing BLM Escalante MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Escalante MFP.

Garfield and Kane County Master Plans recommend multiple use of this area. This alternative would not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. However, designation would conflict with the Counties' plans because oil and gas leases would expire and future leasing and location of minerals would not be allowed. If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall, there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be some losses in local income and Federal revenues currently provided by resource use in the WSA (refer to Table 7) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character).

Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$49,920 of livestock sales and \$12,480 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day Statewide). Motorized recreational use of the WSA is light. The decrease in related local expenditures would be small and insignificant to both the local economy and individual businesses.

The loss of 30,370 acres now leased for oil and gas would cause an eventual loss of up to \$91,110 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$16,542 annually in Federal revenues from the 5,514 acres that could be leased without designation. In addition to these rental fees, any potential royalties from lease production could also be foregone.

Partial Wilderness Alternative (9,620 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, man-

agement would be as described for the No Action Alternative. The specific actions that would take place within the 9,620-acre area designated as wilderness and the 26,264-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed in the designated area that claims would be staked before designation and would eventually be explored and developed, causing an estimated 10 acres of disturbance. It is assumed in the Mineral and Energy Resources analysis that mining claims will not be valid or additional valid claims staked before designation (worst-case analysis). It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed.

It is assumed within the nondesignated area that only 150 acres would be disturbed sometime in the future due to mineral and oil and gas exploration and development. Overall, 160 acres of surface disturbance would occur within the WSA, 40 acres less than under the No Action Alternative and 120 acres more than under the All Wilderness Alternative. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.

The analysis of the No Action Alternative, based on 200 acres of surface disturbance, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, water, forest, and cultural resources. Therefore, these resources would not be significantly affected by this Partial Wilderness Alternative, which assumes 160 acres of surface disturbance.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 9,420 acres of oil and gas leases in the area that would be designated wilderness. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential

resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 1 million barrels of oil and 5 billion cubic feet of natural gas could be foregone. This would allow recovery of 2 million more barrels of oil and 13 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Locatable Minerals

There are presently no mining claims within the area that would be designated wilderness. It is assumed, however, that claims would be staked before wilderness designation (worst-case analysis). Development work, extraction, and patenting could occur on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable 6,400 tons of uranium oxide in 17 percent of the WSA and 500 tons of uranium oxide in 83 percent of the WSA fall within the area that would be designated as wilderness under this alternative. Assuming that the locatable minerals are evenly distributed in the WSA and that the mineral deposits were not included in mining claims filed before designation, 27 percent of the potential for recovery of uranium would be foregone. Therefore, the nondesignated area would allow for recovery of 5,037 tons of uranium oxide.

Because uranium is not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not prevent recovery of significant amounts of uranium.

LIVESTOCK

The effect of designation of 9,700 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 2,496 AUMs allocated, 261 would be within the designated portion of the WSA and 1,435 within the nondesignated portion. Development of future roads or other livestock management facilities for use with 261 AUMs in

the designated portion could be restricted to preserve wilderness values. Because only .75 mile of fence and a pipeline, storage tank, and trough have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected.

VISUAL RESOURCES

Because total surface disturbance in the WSA would be 160 acres under this alternative as opposed to 200 acres under No Action and 40 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and more than under the All Wilderness Alternative. In the portion recommended for designation, 10 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 150 acres in the nondesignated portion of the WSA could be disturbed and would not meet VRM Class II objectives; however, areas with Class III and IV management objectives could be met. Disturbance of a total of 160 acres within the WSA would result in localized long-term impairment of visual values and could significantly affect visual resources in the WSA as a whole.

RECREATION

Impacts on recreational values and opportunities for the 9,620-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 1 mile of way within the WSA would be closed to ORV use. If development of valid mining claims occurred, the quality of primitive recreation opportunity would be reduced. However, the potential for mineral development is low.

In the area that would not be designated (26,264 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 9,620 acres that would be designated wilderness. Size, naturalness (all 9,620 acres affected are natural), outstanding opportunities for solitude (7,300 acres meet the standard and 2,320 acres do not meet the standard), primitive recreation (including 7,300 acres that meet and 2,320 acres that do not meet the standard), and scenic special features would be preserved. Although recrea-

tional use could increase substantially (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 10 acres. Additionally, sights, sounds, and emissions of activities within and adjacent to the 2,800-acre area that would not be designated could result in loss of solitude and primitive recreational values within the designated portion.

In the designated wilderness area, no development of leases is foreseen under this alternative. The anticipated mineral-related surface disturbance would, therefore, be reduced from 40 acres to 10 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of these values in the designated area.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative with the exception of its relationship to Glen Canyon NRA. Nondesignation of the southern portion of the unit would not be consistent with the Glen Canyon NRA wilderness proposal.

SOCIOECONOMICS

Overall, partial designation of this WSA is not expected to result in any changes in existing patterns and trends of population, employment, and local income distributions. The 2,496 AUMs would remain available to cattle in the four allotments and would provide \$3,494 in Federal revenues from grazing fees. Livestock use and ranchers' income would continue as at present, with \$49,920 of livestock sales and \$12,480 of ranchers' return to labor and investment.

The loss of 9,420 acres currently leased for oil and gas would cause an eventual loss of up to \$28,260 per year of lease fees to the Federal treasury. There would also be a potential loss of \$600 annually in Federal revenues from the 200 acres that could be leased without designation of the Partial Wilderness Alternative. In addition to these rental fees, any potential royalties from lease production could also be foregone.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use, but related local income would be small.

Overall, the local economic impact from this alternative would be considered insignificant as would economic impacts from the No Action and All Wilderness Alternatives.

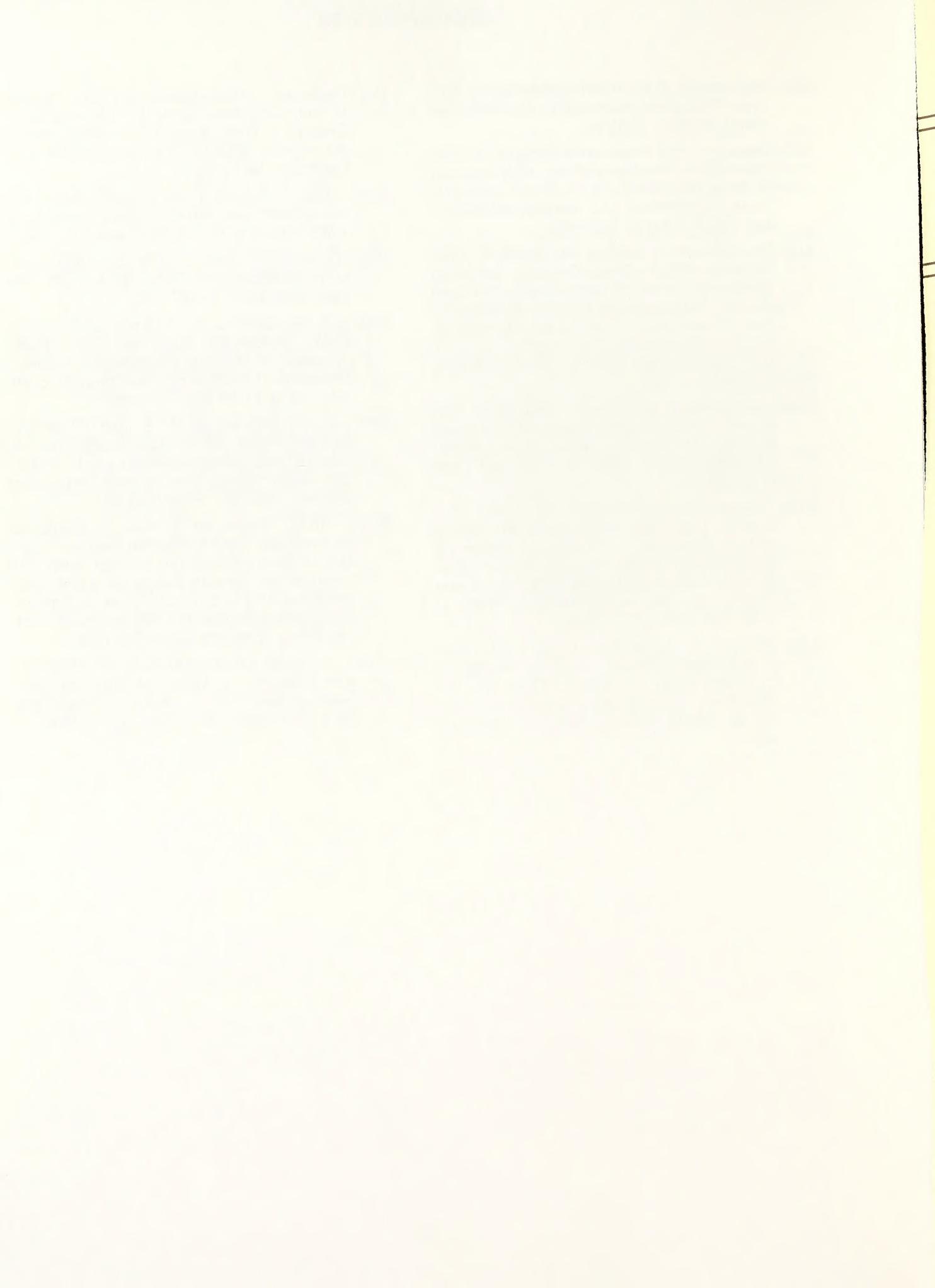
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Escalante Canyons Tract 5 ISA



ESCALANTE CANYONS TRACT 5 ISA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	2
Alternatives Considered and Eliminated from Detailed Study	2
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative (Proposed Action)	4
Summary of Environmental Consequences	6
AFFECTED ENVIRONMENT	6
Air Quality	6
Geology	6
Soils	6
Vegetation	8
Water Resources	8
Mineral and Energy Resources	8
Wildlife	9
Forest Resources	9
Livestock and Wild Horses/Burros	9
Visual Resources	10
Cultural Resources	10
Recreation	10
Wilderness Values	10
Land Use Plans and Controls	11
Socioeconomics	11
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	13
Analysis Assumptions and Guidelines for All Alternatives	13
No Action Alternative	13
All Wilderness Alternative (Proposed Action)	15
BIBLIOGRAPHY	19

ESCALANTE CANYONS TRACT 5 ISA

INTRODUCTION

General Description of the Area

The Escalante Canyons Tract 5 Instant Study Area (ISA) contains 760 acres of BLM-administered land. The ISA is located in Kane County, approximately 41 miles from Escalante, Utah, and is adjacent to Glen Canyon National Recreation Area (NRA). The ISA includes the entire 320 acres of the disjunct tract of the Escalante Canyons Outstanding Natural Area (ONA) and 440 acres of contiguous public land. There are not state or private lands within the boundaries of the ISA. The ISA is managed by BLM's Cedar City District, Escalante Resource Area Office.

Coyote Gulch is a major drainage that passes through the tract. It flows through the ISA from west to east and drains into the Escalante River. Sheer sandstone cliffs surround the Gulch while the southern portion of the ISA has more gentle topography sloping toward the Gulch. Vegetation is characterized by a variety of desert shrubs.

The climate is arid with annual precipitation averaging about 10 inches. From June through early September convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates occur primarily from November through March.

Summer temperatures in Escalante, Utah range approximately 40 degrees Fahrenheit (F) with highs in the upper 90s and lows in the mid 50s. Winters in Escalante, Utah have a temperature range of about 27 degrees F with highs in the low 40s and lows about 15 degrees F. Snowfall in Escalante averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified In Scoping

General issues pertaining to the ISA are discussed in Volume I. Issues identified for the Escalante Canyons Tract 5 ISA during the study phase are the consistency with the Glen Canyon NRA Management Plan (USDI, National Park Service [NPS], 1979) and the possibility of changing the air quality standard. Issues and concerns raised during the spring of 1984 public scoping meetings (USDI, BLM, 1984) are responded to below.

1. *Comment:* The area probably has wilderness qualities, but it cannot stand on its own due to its small size.

Response: Because Escalante Canyons Tract 5 is a ISA, no size limitations apply.

2. *Comment:* The best alternative is to include Escalante Canyons Tract 5 ISA in the Glen Canyon NRA. Small boundary adjustments are allowed under the law creating the Glen Canyon NRA, and adding this area under the terms of this law has been discussed. If this cannot be done, this area must be designated as wilderness.

Response: The ISA adjoins Glen Canyon NRA. The relationship of the ISA to Glen Canyon NRA is discussed in the Affected Environment, Land Use Plans and Controls section.

3. *Comment:* Why delete Escalante Canyon when it meets all the criteria? Apparently there were irrational deletions of all or parts of the Wilderness Study Areas (WSAs) and ISAs. After review of Site Specific Analysis (SSA) summaries in the scoping document, it becomes apparent that many areas have no resource conflicts and excellent wilderness qualities, yet no acres were recommended for wilderness.

Response: During scoping for the Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS in order to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and, at that time, will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subse-



quently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

4. *Comment:* Would BLM wilderness units be consistent with other adjoining Federal land use?

Response: Escalante Canyons Tract 5 ISA is adjacent to a proposed wilderness area in Glen Canyon NRA. Wilderness designation would complement that proposal. It is also adjacent to BLM land that is managed for multiple use. Certain uses such as mineral leasing and location would be excluded if the ISA were designated as wilderness.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

In addition to the alternatives analyzed in detail, two alternatives were suggested during scoping. Both were considered and eliminated from detailed study. One suggestion was for a partial alternative that would have no resource conflicts. Due to the small size of the ISA, a partial alternative would not be meaningful. A determination has been made that the entire 760-acre ISA would not be a viable independent candidate for designation as wilderness if Congress does not designate contiguous Federal land in Glen Canyon.

The other alternative suggested was the transfer of the ISA from BLM to NPS administration. Such an action would be pursued independent of the wilderness study process and, therefore, is not addressed further in this document.

Alternatives Analyzed

Two alternatives are analyzed for this ISA: (1) No Action; and (2) All Wilderness (760 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

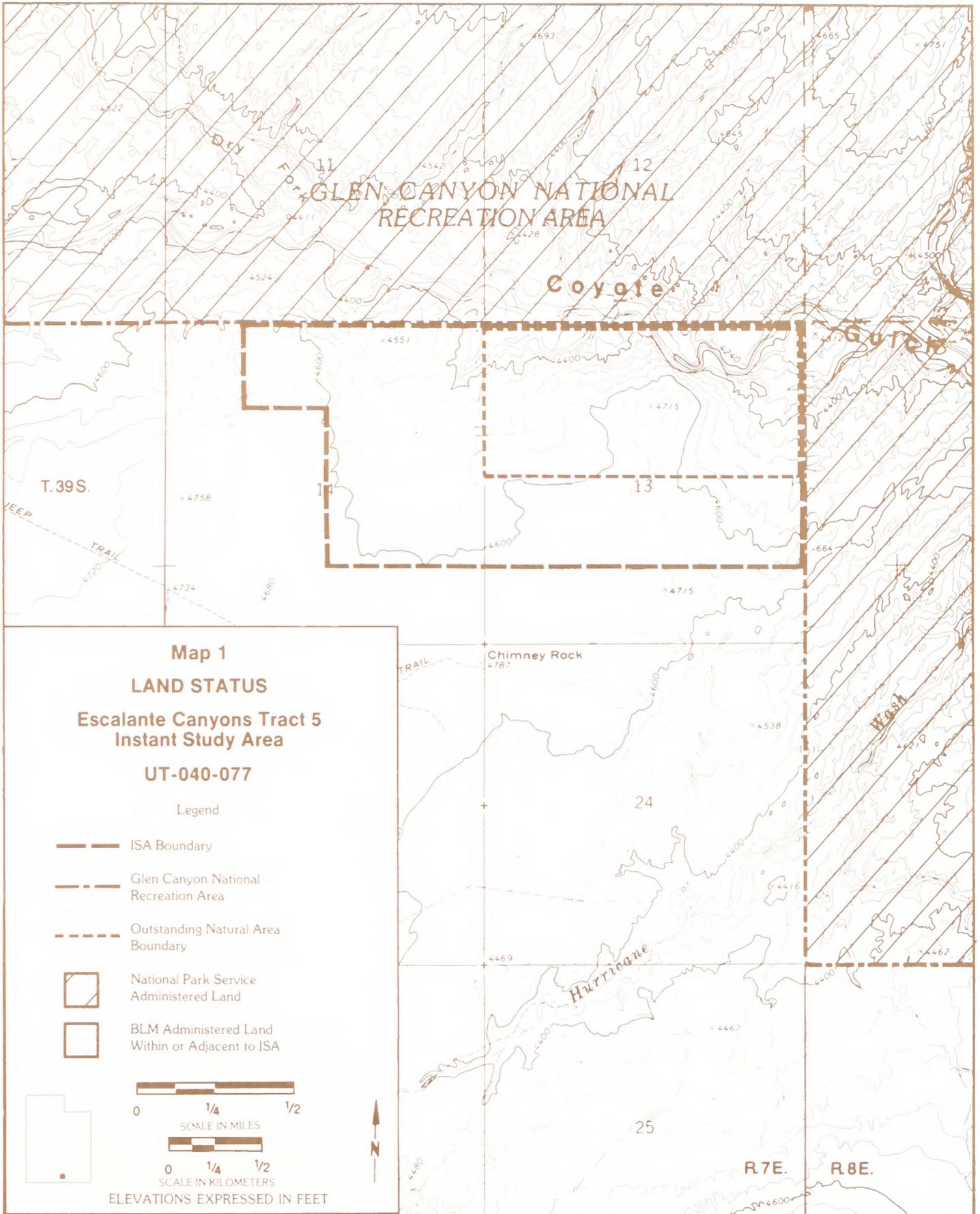
Under this alternative, none of the 760-acre Escalante Canyons Tract 5 ISA would be designated by Congress as part of the National Wilderness

Preservation System (NWPS). The area would continue to be managed in accordance with Escalante Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1981a). There are no State or private lands within or adjacent to the ISA. The Glen Canyon NRA, administered by the NPS, borders the ISA on two sides (refer to Map 1).

The following are specific actions that would take place under this alternative:

- The 760 acres in the ISA would be open to mineral location, and development work, extraction, and patenting would be allowed. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809) without concern for wilderness values. Future oil and gas leases could be issued and developed under Category 1 (standard stipulations) on all 760 acres.
- The present 84 Animal Unit Months (AUMs) allocated for domestic livestock grazing use in the ISA would continue as authorized in the BLM planning documents. Although none exist or are currently proposed, new rangeland improvements could be proposed and implemented without wilderness considerations.
- Development, use, and maintenance of facilities and improvements for wildlife, water resources, etc. (none exist or are currently planned) could be allowed if in conformance with the BLM planning documents.
- The ONA portion (320 acres) would continue to be closed to off-road vehicle (ORV) use and the balance of the ISA (440 acres) would remain open to ORV use.
- The entire area would continue to be closed to woodland product harvest because no forest resources occur in the ISA.
- The area would continue to be managed as Visual Resource Management (VRM) Class I (320 acres), Class III (220 acres), and Class IV (220 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit

ESCALANTE CANYONS TRACT 5 ISA



ESCALANTE CANYONS TRACT 5 ISA

provided they are carried on in an environmentally sound manner.

- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.
- It is assumed that the No Action Alternative would include continued designation of the 320 acres of the Escalante Canyons ONA and would include the management actions discussed for this alternative. Changes in management of the ONA would be separate actions that are not dependent on the wilderness review process and are, therefore, not analyzed in this document.

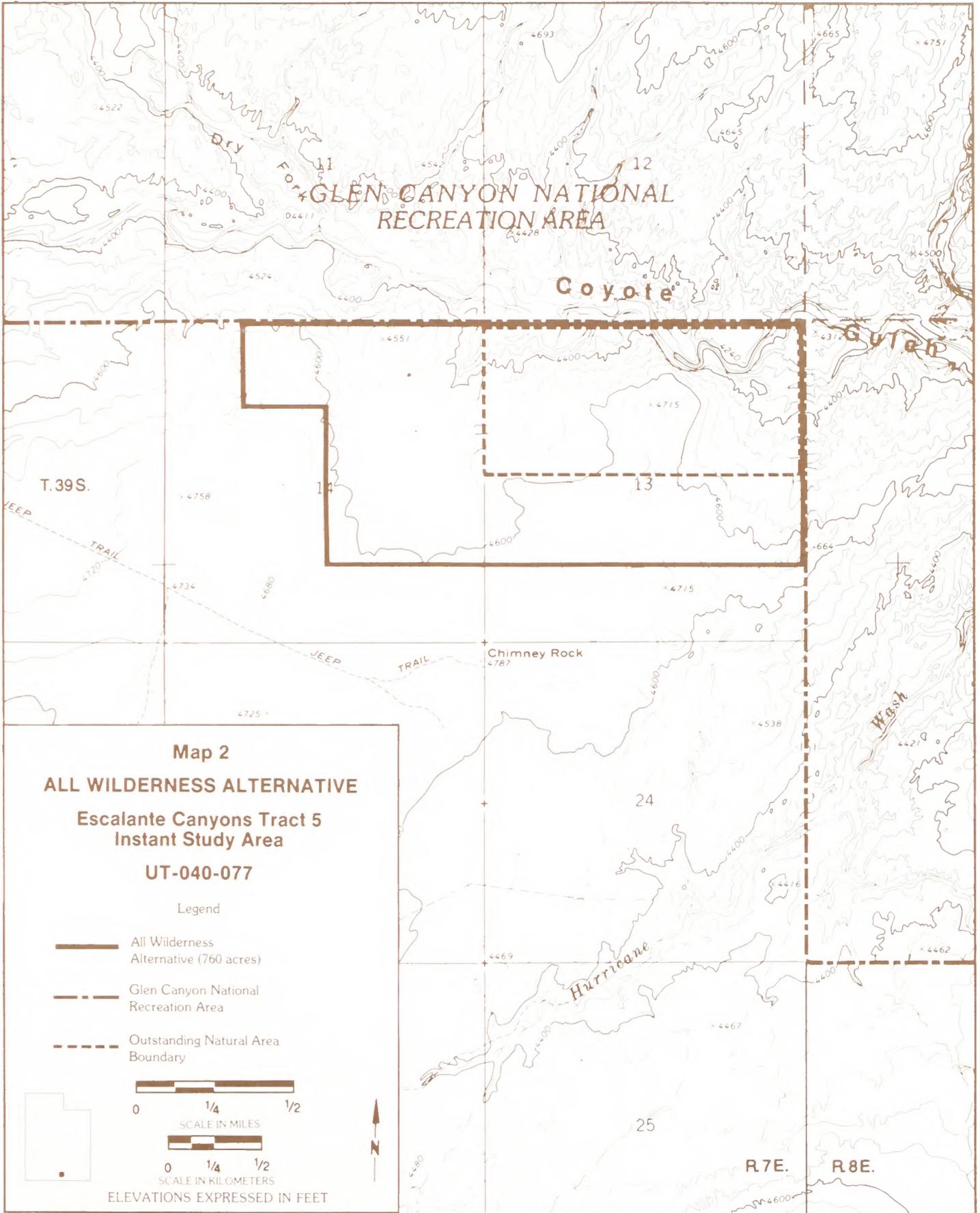
ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under the All Wilderness Alternative, all 760 acres of the Escalante Canyons Tract 5 ISA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, there would be no sections of State land within or adjacent to the ISA that would need to be exchanged. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in or adjacent to the ISA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 760 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. There are no claims or leases existing in the ISA. Mining-related development work, extraction, and patenting would be allowed on any new mining claims located prior to wilderness designation. It is assumed that some mining claims would be located prior to designation. No oil and gas leases or other mineral leases would be issued.
 - Present domestic livestock grazing would be allowed to continue as authorized in the Escalante Planning Unit MFP. The 84 AUMs in the ISA would remain available to
- livestock as presently allotted. There are no existing rangeland developments that would involve continued use and maintenance. After designation, new rangeland developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness resource protection and management provided that wilderness protection criteria are met (refer to Appendix 1); however, there are none proposed at this time.
 - New water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed after designation only if compatible with wilderness values, if necessary to correct hazardous conditions, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Escalante Canyons Tract 5 ISA, and none are planned.
 - Wildlife transplants or developments would be allowed after designation only if compatible with wilderness values. None are existing in this ISA, and none are currently planned.
 - The entire 760-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions. A 320-acre portion of the area is currently closed to vehicular use as part of the ONA. There are no existing ways to be closed and there are no roads or ways bordering the ISA that would provide for continuing open vehicular use. The nearest vehicular access is a jeep trail about .25 mile southwest of and outside of the ISA; it would be allowed to remain open to vehicular use.
 - Harvest of forest products would not be allowed because there are no forest resources present.
 - A specific Wilderness Management Plan would be developed to govern use and protection of the 760-acre wilderness.
 - Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
 - Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, prop-

ESCALANTE CANYONS TRACT 5 ISA



ESCALANTE CANYONS TRACT 5 ISA

erty, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that fires would be controlled by hand or aerial techniques.

- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Hunting would be allowed subject to applicable State and Federal laws and regulations, subject to nonmotorized access.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences expected to result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

The Escalante Canyons Tract 5 ISA and surrounding area have been designated Class II under the Prevention of Significant Deterioration (PSD) regulations. The BLM will not consider or recommend any change in air quality classifica-

tion as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government or Congress, not of the BLM (USDI, BLM, 1982b).

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit; however, data collected from various sites (Page, Arizona and Four Mile Bench) approximately 35 miles southwest of the ISA indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations. Capitol Reef National Park, located approximately 12 miles northeast of the WSA, has a Class I designation under the PSD regulations.

Geology

The Escalante Canyons Tract 5 ISA lies within the Canyonlands Section of the Colorado Plateau Physiographic Province. Elevations in the tract range from approximately 4,715 feet at a point overlooking Coyote Gulch on the south rim, to 4,200 feet at the bottom of Coyote Gulch. An alcove-type natural arch occurs in Coyote Gulch, which is the major drainage in the tract. It is fed by northeast tributaries and flows due east to the Escalante River.

The surrounding topography consists of steep-walled canyons, mesas, and plateaus. The ISA itself is primarily the southern half of Coyote Gulch, extending from the bottom of the gulch to the top of the southern rim.

Rocks of Jurassic Age, totaling about 2,000 feet in thickness, cover the northern and eastern portions of the tract. Thin Quaternary deposits, consisting chiefly of wind-blown silt, cover the western and southern portions of the tract. Underlying Mesozoic and Paleozoic rocks in the region are more than 4,000 feet thick (Weir and Lane, 1981). Cross-bedded Navajo Sandstone forms the most extensive outcrop. No significant structures are known to exist within the immediate vicinity of the ISA.

Soils

Rockland areas occurring on approximately 80 percent (608 acres) of the ISA consist of exposures of bedrock, mostly sandstone and limestone. The rockland grouping has very little vegetation with native vegetation growing in crevices and pockets of soil (USDI, BLM, 1980a).

Sandy soils occupying approximately 20 percent (152 acres) of the ISA occur in the southwest

ESCALANTE CANYONS TRACT 5 ISA

**TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
ESCALANTE CANYONS TRACT 5 ISA**

Resource	Alternatives	
	No Action	All Wilderness (760 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 500 tons of uranium oxide.	Oil and gas would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	About 2.6 percent of the ISA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.
Livestock	Grazing of 84 AUMs would continue. New developments could be constructed; however, none are now proposed.	Grazing of 84 AUMs would continue. Little effect on grazing management is expected. New developments, proposed in the future, might not be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 20 acres.	Visual quality could be impaired on up to 20 acres.
Recreation	Recreational use could increase from the present 155 visitor days per year to 231 over the next 20 years. Up to 20 acres of mineral-related disturbance could reduce the quality of primitive recreation. Currently there is no ORV use.	Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 20 acres (2.6 percent of the ISA), but the values in the rest of the ISA would not be affected.	Wilderness values would be protected, except on up to 20 acres (2.6 percent of the ISA) which may be disturbed by development of valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with the <i>Kane County Master Plan</i> , State of Utah plans and policies, and the current BLM Escalante MFP. It would partly complement the NPS proposal for trailheads, but would not complement the NPS wilderness proposal.	This alternative would not be consistent with Kane County's concept of multiple use, but would complement the NPS wilderness proposal. Designation would constitute amendment of the BLM Escalante MFP.
Socio-economics	Annual local sales of less than \$2,316 and Federal revenues of up to \$118 would continue. An additional \$2,280 per year in Federal revenues could be derived from leasing of presently unleased areas.	Annual local sales of less than \$2,316 and Federal revenues of up to \$118 would continue. Potential additional Federal revenue of \$2,280 per year from mineral leasing would be foregone.

ESCALANTE CANYONS TRACT 5 ISA

corner of the unit. Runoff and sediment production from these soils are low (USDI, BLM, 1980a).

Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acre	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	608	80	790
Slight	0.6	0	0	0
Stable	0.3	152	20	50
Total		760	100	840

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

Desert shrub (760 acres) is the only existing vegetation type in the ISA. Predominant species in this type are blackbrush, Mormon tea, sand dropseed, and Indian ricegrass. One hundred forty-seven acres of the ISA are primarily slickrock and contain very little vegetation. No threatened or endangered plants or species under review for threatened or endangered status are known to exist in the ISA. Approximately 3 acres of riparian vegetation exist in the bottom of Coyote Gulch and extend about .5 mile along the stream.

The Escalante Canyons Tract 5 ISA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) type of the WSA is blackbrush. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The ISA does not contain any perennial streams; however, water does flow intermittently in the Coyote Gulch for approximately .5 mile. Flash floods are common in the Gulch from July to mid-September during the thunderstorm season. No springs occur in the ISA.

Water rights within the ISA's boundary total 25.62 acre-feet annually from Coyote Gulch. This water is allocated to the BLM for livestock watering (Utah Division of Water Resources, 1969).

Water quality is poor due to livestock use and flooding conditions.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA and ISA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 2- was assigned to the Escalante Canyons Tract 5 ISA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the ISA.

If the ISA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider the reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the ISA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 3.

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c3	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None

Sources: SAI, 1982; DOE, 1983.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

This unit is in an area considered to have a low certainty (c1) for the occurrence of small-sized (less than 10 million barrels of oil and less than 60 billion cubic feet of natural gas, with less than 3 million barrels of oil and 18 billion cubic feet of gas recoverable) oil and gas fields (f2). Fields of this size in Utah typically have an areal extent of about 2,500 acres and require about 160 acres for developmental facilities such as roads, pads, and disposal ponds.

It is important to note that there are no known structures within or near the ISA that might represent potential exploration targets. As a result, the probability for exploration and development occurring in the ISA is extremely low. The area is open to oil and gas leasing with standard stipulations (Category 1); however, there are no leases within the ISA.

LOCATABLE MINERALS

There are no mining claims within the ISA, and the likelihood for mineral development is low.

Uranium

The ISA is considered by the U.S. DOE (1983) to be in an area favorable for the occurrence of small deposits of uranium (f2/c3). This area is identified on the map as the Chinle Formation favorable area. Favorable areas are defined by the U.S. DOE as geographic areas in which available data indicate the existence of geologic environments favorable for the concentration of uranium. A favorable area does not represent one of the U.S. DOE's potential uranium resource classes and, therefore, no estimate was made by the U.S. DOE

for possible tonnages in the area. However, the f2 rating assigned to the area indicates that any deposit, if it existed, would not be expected to exceed 500 tons of uranium oxide. The areal extent of this size deposit would not exceed 100 acres (based on 0.01-percent minimum grade and a 5-meter average thickness for host rock).

Any mining operation in the unit would be by underground methods. Although it is difficult to project the extent of such a hypothetical operation, underground mines in a small deposit typically require only a few acres for surface facilities such as portals, air vents, and leaching sites.

Developmental drilling, especially for detailed delineation of a deposit, could require significantly more surface area than actual mining operations. This would depend largely on the size and complexity of the deposit and how much drilling would be involved. A closely spaced drilling program could require anywhere from a few acres for a small deposit with a blanket-type configuration, to much more acreage for larger deposits with more complex configurations.

Wildlife

The Escalante Canyons Tract 5 ISA has habitat that could support approximately 50 species of mammals, 170 species of birds, 17 species of reptiles, and 5 species of amphibians. The birds are mainly seasonal residents or migrants while the other species are primarily residents.

The ISA provides yearlong range for mule deer; however, deer populations are extremely low.

Two endangered species, peregrine falcon (*Falco peregrinus*) and bald eagle (*Haliaeetus leucocephalus*) are rare migrants through the ISA. The Utah Division of Wildlife Resources (UDWR, 1982) lists two sensitive species that occur occasionally throughout the ISA: western and mountain bluebirds. No other sensitive, threatened, or endangered species are known to occur within the ISA. There is no identified crucial or critical habitat in the ISA.

Forest Resources

No forest resources occur in the WSA. The desert-shrub vegetation type does not contain any plant species suitable for timber or fuelwood harvesting.

Livestock and Wild Horses/Burros

The ISA is within the Chimney Rock and Lower

ESCALANTE CANYONS TRACT 5 ISA

Cattle grazing allotments for cattle. There are no existing or proposed range improvements in the ISA. Table 4 summarizes livestock grazing use in the ISA. There are no wild horses or burros within the ISA.

TABLE 4
Livestock Grazing Use Data

Allotment	Total Acres	Suitable Acres in		Unsuitable Acres in		Grazing Preference in ISA (AUMs)	Livestock Permittees Using ISA
		ISA	ISA ¹	ISA	ISA		
Chimney Rock	34,361	721	613	108		84	1
Lower Cattle	83,049	39	0	39		0	7
Total		760	613	147		84	8

Source: USDI, BLM, 1979a.

¹ The suitability of an area for grazing is determined by a number of factors including steepness of terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available feed is not allocated for domestic livestock grazing.

Visual Resources

The BLM visual resource inventory classified approximately 320 acres as Class A, 185 acres as Class B, and 255 acres as Class C scenery. Refer to Appendix 7 for a detailed description of BLM's VRM system. VRM class is as follows: Class I, 320 acres, Class III, 220 acres, and Class IV, 220 acres. In the Glen Canyon NRA wilderness proposal, NPS assigned a Value Class of I (highest) to Coyote Gulch and Value Class III (next to lowest) to the area adjacent to the canyon (USDI, NPS, 1979). Portions of the ISA contain visual resources with unique scenic values.

Cultural Resources

Based on a Class I and II survey for the southern Utah coal project (USDI, BLM, 1978) archaeological site densities in the ISA are low (1 to 10 sites per 23,000 acres). The Escalante Canyons Tract 5 ISA does not contain any known historical or archaeological sites.

Recreation

Most of the use presently occurring within the ISA is associated with primitive recreation opportunities in Coyote Gulch. Only about .50 mile of Coyote Gulch is in the ISA. However, this 15.5-mile-long canyon is a major destination canyon in Glen Canyon NRA. Coyote Gulch is also the major hiking access route to the Escalante River in this portion of the NRA.

The ISA contains 320 acres of the 129,000-acre Escalante Canyons ONA designated on December 23, 1970 for the purpose of preserving unique scenic values and natural wonders. The ISA includes 440 acres of lands contiguous to the ONA. Of the 129,000 acres designated in 1970, 127,840 acres have been transferred by public law to Capitol Reef National Park and Glen Canyon NRA. The remaining 1,160 acres are divided among three ISAs. ORV use is closed on the 320 acres of the ISA that comprise the ONA. Use is minimal on the remaining 440 acres of the ISA as there are no ways within the ISA.

Access to Coyote Gulch is via the Red Well trailhead located outside of the ISA. In 1981, approximately 155 hikers registered at this trailhead. The ISA is primarily used as an access route to the NRA and it would be difficult to determine the magnitude of the minor use that is directed only to the ISA. It is estimated that the ISA has 155 visitor days per year.

Wilderness Values

SIZE

The ISA is very small, encompassing only 760 acres. It is approximately 1.75 miles long (east to west) and .75 mile wide (north to south).

NATURALNESS

The entire ISA is in a natural condition. No imprints of man are found.

In the ISA, the high quality of naturalness has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b). No additional imprints have occurred in the ISA as a result of impairing uses or activities allowed under the BLM's *Interim Management Policy* (USDI, BLM, 1979b).

SOLITUDE

The outstanding opportunity for solitude in this ISA is directly associated with the topographic screening provided by the canyon of Coyote Gulch. The canyon is separated geographically from the remainder of the ISA by the steep canyon walls. Views within the canyon are limited to .25 mile or less. The topographic screening in the canyon provides opportunities for isolation and seclusion. Outside sights and sounds are an insignificant influence on solitude.

In summary, approximately 230 acres (30 percent) of the ISA have outstanding opportunities for solitude and 530 acres do not meet the stand-

PRIMITIVE AND UNCONFINED RECREATION

Four recreational activities are excellent within the ISA. Therefore, the opportunity for primitive recreation is outstanding. Hiking, backpacking, horseback riding, and sightseeing for geological features are all considered outstanding in quality in Coyote Gulch. It is in the immediate canyon of Coyote Gulch where these activities can take place. The ISA canyon bottom constitutes a short but integral portion of Coyote Gulch hiking destination in the Escalante River drainage. The immediate canyon bottom and inner walls occupy approximately 33 acres of the ISA.

The primitive recreation opportunities on 33 acres (4 percent) of the ISA are outstanding. The remaining 727 acres do not meet the criterion.

SPECIAL FEATURES

Scenic values include the enclosed red Navajo Sandstone and sheer canyon walls associated with Coyote Gulch. An alcove-type natural arch is present in Coyote Gulch. Approximately 230 acres possess scenic values.

Land Use Plans and Controls

The ISA contains 760 acres of public land administered by BLM. Public lands in the ISA are within the BLM Escalante Planning Unit and are being managed according to the land use decisions of the Escalante MFP (USDI, BLM, 1981a). Principal uses include recreation and grazing. There are no existing or proposed rights-of-way within the ISA. The ISA is located in Kane County and no State, private, or split estate lands are enclosed within the boundaries of the ISA.

The General Management Plan for Glen Canyon NRA identifies the area adjacent to the ISA as a "natural zone" which is proposed for wilderness designation. The natural zone covers some 668,670 acres of the NRA. This zone includes the recreation area's outstanding scenic resources, relatively undisturbed areas isolated and remote from the activities of man, and areas bordering on places with established land use practices complementary to those of the natural zone (USDI, NPS, 1979).

The Glen Canyon NRA Management Plan also proposes a boundary adjustment with the BLM to add land in Coyote Wash (including this tract) to the NRA for use as an access corridor. The NPS proposes this addition as a recreation and resource utilization zone where necessary development might take place (USDI, NPS, 1979).

The ISA is contiguous to the Escalante Wilderness Study Unit in Glen Canyon NRA administered by the NPS. The Escalante Wilderness Study Unit containing 326,150 acres is located east of the ISA.

The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) identifies the land in the ISA as multiple use. The plan states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple use concept. Kane County wilderness policy is opposed to designation of this ISA as wilderness."

Socioeconomics

Escalante Canyons Tract 5 ISA is located entirely within Kane County. However, since most access is from the north, the primary area of economic impact is identified as Garfield County. Within this region impacts as expected would be focused within the municipality of Escalante, located approximately 41 miles north of the ISA.

DEMOGRAPHICS

Garfield is a rural county having an average population density of less than one person per square mile. This density is very low when compared to the statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in this county (3,673 persons) is concentrated in small communities rather than being evenly distributed throughout the area.

EMPLOYMENT

The economy of Garfield County is dominated by the government sector in terms of employment (USDC, Bureau of Economic Analysis, 1982). The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (13 percent), and services (13 percent). Personal income fell in similar proportions. Table 5 presents employment and personal income data for Garfield County.

Possible impacts from wilderness designation are expected to be more obvious at the community level than the county level.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is

ESCALANTE CANYONS TRACT 5 ISA

TABLE 5
1980 Employment and Income
Garfield County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	2,143	24,792
Proprietors	349	2,637
Farm Proprietors	209	807
Nonfarm Proprietors	140	1,830
By Industry Source	—	—
Farm	27	949
Nonfarm	1,767	23,843
Private	1,332	19,049
Ag. Serv., For., Fish., and Other	(L)	79
Mining	208	4,222
Construction	379	5,536
Manufacturing	247	3,294
Nondurable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	84	1,545
Wholesale Trade	(L)	96
Retail Trade	126	1,302
Finance, Insurance, and Real Estate	16	189
Services	270	2,786
Government and Government		
Enterprises	435	4,794
Federal, Civilian	140	1,656
Federal, Military	24	64
State and Local	271	3,074

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

assumed that most of the nongovernment employment and income in the area is based in the agriculture and services sectors. This is based upon the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

The community of Escalante lies along a major access route to the ISA, Utah Highway 12. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is a gateway and service area for visitors to the Escalante Canyons Tract 5 ISA.

Economic-related activities in the ISA are limited and include livestock production and recreation. Table 6 summarizes local income and Federal revenues from the ISA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 6
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	0
Mineral Production	0	0
Livestock Grazing	\$1,680	\$118
Woodland Products	0	0
Recreational Use	Less than \$636	0
Total	Less than \$2,316	Up to \$118

Sources: BLM File Data; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

If mining claims are located within the ISA, regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which would be spent in the local economy. There are no mining claims presently in the ISA.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Eight livestock operators have a total grazing privilege of 84 AUMs within the WSA. If all this forage were utilized, it would account for \$1,680 of livestock sales and \$420 of ranchers' returns to labor and investment.

The ISA's nonmotorized recreational use and related local expenditures are low and are insignificant to both the local economy and individual businesses. There is no motorized recreational use being made in this ISA. The actual amount of income generated locally from recreational use in the ISA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Escalante Canyons Tract 5 ISA is estimated as about 155 visitor days per year. Only a portion of the expenditures for recreational use of the ISA contributes to the local economy of Garfield County.

The ISA generates Federal revenues from livestock sources (refer to Table 6). Livestock permittees in the ISA can use up to 84 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$118 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements. There are no oil and gas leases in the ISA.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the ISA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM ISAs and WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the ISAs and WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to locatable mineral exploration and development. The area would be open to resource use and development without control for wilderness protection. The degree of future development is unknown, but would probably be low due to the ISA's rough terrain and low resource potential. The following is a worst-case

analysis, based on the assumption that uranium would be developed sometime in the future and would result in 20 acres of disturbance. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The ISA would continue to be managed by the State of Utah as a PSD Class II area. If uranium is developed, air quality could be reduced up to the PSD Class II limitations. Disturbance of 20 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with uranium exploration and development activities would probably not exceed 20 acres. This would not significantly affect geology.

SOILS

It is estimated that up to 20 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 20 acres would increase from 26 cubic yards/year to 54 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the ISA would increase by approximately 28 cubic yards (3 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible.

VEGETATION

The anticipated maximum of 20 acres disturbed would not significantly impact the ISA's sparse vegetation.

WATER RESOURCES

Since precipitation is low and Coyote Gulch is an ephemeral stream, no significant sedimentation or change in total dissolved solids is expected to occur from the 28 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Escalante Planning Unit.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the ISA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Some surface disturbance would take place if exploration and development were to occur. However, since the area is not currently leased and due to the small size of the area and the oil and gas deposits, no development is expected under this alternative.

Locatable Minerals

Locatable mineral development could occur within the ISA. This ISA would remain open to mining claim location. The potential deposit of up to 500 tons of uranium oxide could be developed. Approximately 20 acres could be disturbed due to exploration and development of this locatable mineral resource. However, the likelihood of development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by disturbance of an estimated 20 acres (2.6 percent of the ISA) through mineral exploration and development. Deer and mobile nongame animals would be dispersed from the disturbed area for the lifetime of these activities. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels.

FOREST RESOURCES

There are no trees in the ISA; therefore, there can be no impact to forest resources.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Escalante Planning Unit MFP. The 84 AUMs currently allocated in the ISA are controlled by eight livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are not used in the ISA to manage livestock, few, if any, changes in livestock management techniques are expected.

VISUAL RESOURCES

Mitigative measures would be applied to minimize visual contrast created by intrusions. Visual

values in areas affected by the estimated 20 acres of surface disturbance from mineral and energy exploration and development would be degraded. Management objectives in VRM Class II areas would not be met. However, VRM Class III and IV management objectives would be maintained. After rehabilitation, some permanent localized degradation would be expected.

CULTURAL RESOURCES

Archaeological sites in the ISA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 20 acres by mineral exploration and development under this alternative could affect archaeological sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the low site densities and the experience of BLM District archaeologists, it is expected to be minimal. Vandalism could be a problem and would increase in proportion to the general population increase.

RECREATION

Up to 20 acres could be disturbed by mineral activities. The quality of the primitive recreational opportunities could be diminished on the affected areas. The future increase in recreational use of the ISA is unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 155 current visitor days per year to 231 visitor days at the end of 20 years. All use would be associated with primitive recreational activities mainly related to the popularity of Coyote Gulch in the NRA.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante Planning Unit MFP. Expected mineral and energy exploration and development could disturb an estimated 20 acres. Wilderness values in this ISA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) could be lost or diminished in affected areas.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the

Kanè County Master Plan, which recommends multiple use. It would also complement the NPS proposal of acquiring the area for an access corridor if trailhead facilities are proposed. It would not be consistent with the NPS wilderness recommendation for the adjoining area. This alternative is based on implementation of the current BLM Escalante Planning Unit MFP and is, therefore, in conformance with it.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. Even if the uranium in the ISA were developed, it would not lead to a significant increase in employment and income for Garfield County. The probability of economic development of minerals within the ISA is low.

There would be no livestock-related economic losses because the existing grazing use (84 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only 76 visitor days per year over the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the ISA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 760 acres in the ISA open to oil and gas leases that are currently not leased. If leased, they would bring up to \$2,280 additional Federal lease fee revenues per year in addition to potential royalties from lease production. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$118 per year) would continue. Overall, the local economic impact would be considered insignificant.

All Wilderness Alternative (760 Acres) (Proposed Action)

As identified in the Description of the Alternatives section, the major changes that could occur in the 760-acre area would be related to its withdrawal from mineral location and closure to new mineral

leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing).

For the following analysis it is assumed that mining claims would be located before wilderness designation and would eventually be explored and developed, causing an estimated 20 acres of disturbance within the ISA. It is also assumed that oil and gas leases would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the ISA.

Because potentially disturbed areas for this alternative would be the same as the No Action Alternative (20 acres), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, mineral and energy, wildlife, and forest resources would be insignificant as described for the No Action Alternative. However, wilderness designation would provide additional protection to these resources.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas (3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable) could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities even without wilderness designation, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Locatable Minerals

There are presently no mining claims in the ISA. Up to 500 tons of uranium oxide that are recoverable could occur within the ISA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 20 acres could be disturbed due to exploration and development of the locatable mineral resource.

The worst-case impact to minerals would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of up to 500 tons of uranium oxide would be foregone. Because production of this metal is not currently occurring and because economic considerations (e.g., transportation, low potential, etc.) are unfavourable,

ESCALANTE CANYONS TRACT 5 ISA

avorable, it is unlikely that exploration or development will occur even without wilderness designation. Therefore, this alternative would not result in any significant loss of recoverable resources.

LIVESTOCK

New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values.

Because motorized vehicles are not used in the ISA to manage livestock, no changes in livestock management would result with this alternative.

VISUAL RESOURCES

A slight benefit would occur to the visual resources of the ISA because the VRM class outside the ONA would change from Classes III and IV to the more restrictive Class I. That class generally allows only natural ecological change and, therefore, would reduce the potential for surface-disturbing activities.

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 20 acres of surface disturbance from mineral and energy exploration and development would be degraded, and the VRM Class I management objectives would probably not be met during the short term. Even after rehabilitation, some permanent localized degradation would be expected; however, in the ISA as a whole, values would not be significantly affected.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the ISA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 155 visitor days a year), the ISA has outstanding primitive recreational values. If designated, those high quality recreational opportunities would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the ISA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and cur-

rent trends of recreational use. Designation will have little or no effect on visitors to this ISA because use is tied to the popularity of Coyote Gulch in the NRA.

Mineral-related surface disturbance on up to 20 acres could cause localized impairment of values. No impact from closing the area to ORV use is expected because there is presently no use.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values. Recreation opportunities in Glen Canyon NRA could also be protected and enhanced by complementary management in this ISA.

WILDERNESS VALUES

Designation and management of all 760 acres as wilderness would ensure the preservation of the wilderness values of naturalness and outstanding opportunities for solitude. The solitude characteristic would be preserved on approximately 230 acres that meet the standards and 530 acres that do not meet the standards for outstanding opportunities for solitude. Naturalness would be preserved on all 760 acres, and the primitive and unconfined recreation characteristic would be preserved on 33 acres that meet and 727 acres that do not meet the standards for outstanding opportunities. The scenic special features in this ISA would also be protected and preserved.

No development of leases is foreseen under this alternative. The anticipated mineral-related surface disturbance would be 20 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely that a significant loss of solitude and naturalness would occur in the area as a whole than under the No Action Alternative.

Outstanding opportunities for four recreational activities (backpacking, hiking, horseback riding, and sightseeing) would be preserved.

Designation of this ISA as wilderness would benefit the values and uses of the contiguous NPS wilderness proposal. The ISA is an access route into the Escalante drainage of Glen Canyon NRA.

Thus, it is concluded that wilderness designation and management of all 760 acres of the Escalante Canyons Tract 5 ISA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude (outstanding

on 230 acres) and primitive recreation (outstanding on 33 acres) except in localized areas affected by the surface disturbance related to mineral exploration.

LAND USE PLANS AND CONTROLS

This alternative would complement the NPS wilderness proposal for the adjacent Escalante area. The existing BLM Escalante Planning Unit MFP does not provide for wilderness designation. Congressional designation of the ISA as wilderness would be an amendment to the Escalante MFP.

The *Kane County Master Plan* recommends multiple use of public lands in the county. This alternative would not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. However, this alternative would conflict with the county's multiple-use concept because restrictive conditions would be placed on mineral development and oil and gas leases would not be allowed.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there could be slight losses in potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the ISA is low. Valid mining claims existing at the time of designation could be developed but designation would preclude new oil and gas leases and claims from being established in the ISA. Precluding exploration and development of minerals would not alter existing economic conditions because there are no leases or claims in the ISA. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$1,680 of livestock sales and \$420 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income. No such potential range improvements have been proposed.

Recreation-related local expenditures would be small and approximately the same as with the No Action Alternative.

There would be a potential loss of \$2,280 annually in Federal revenues from the 760 acres that could be leased without designation. In addition to these rental fees, any potential royalties from lease production could also be foregone.

Overall, the local economic impact of this alternative would be insignificant.

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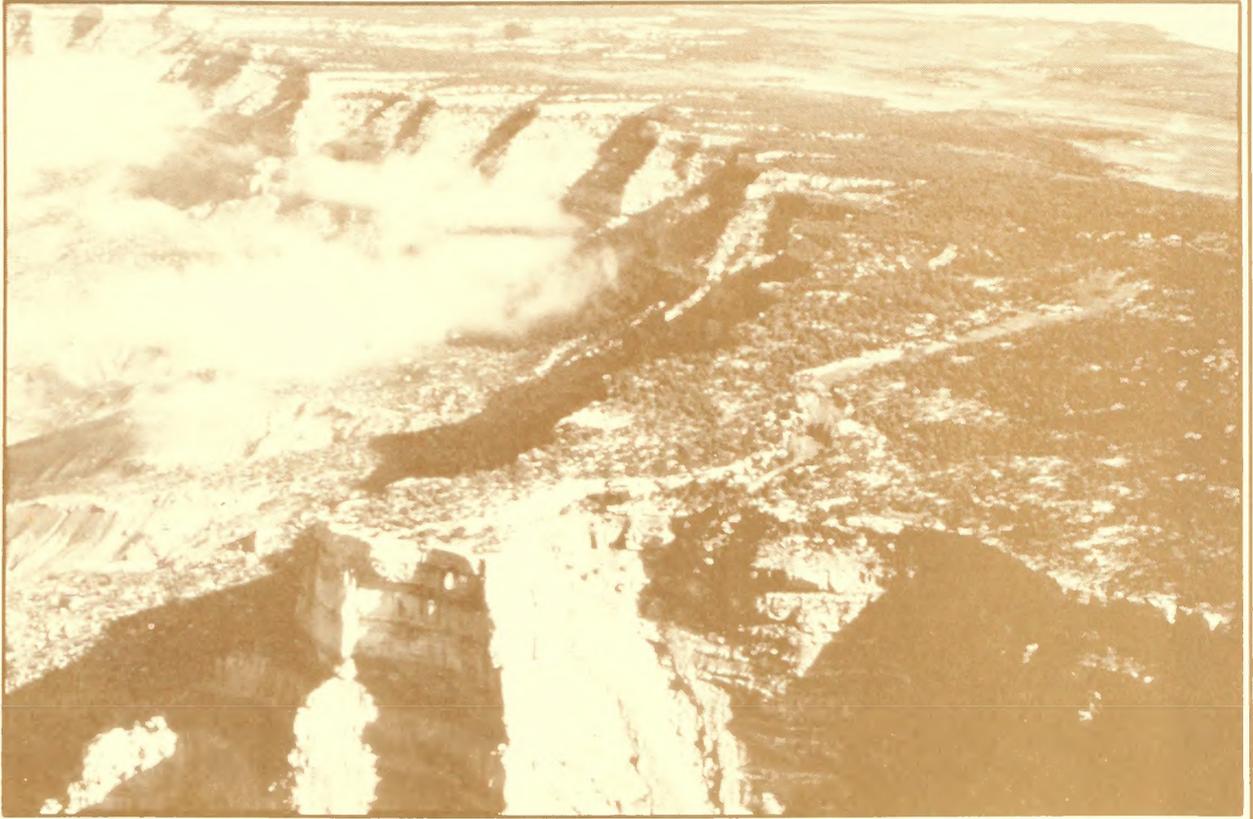
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Fifty Mile Mountain WSA



FIFTY MILE MOUNTAIN WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	2
Alternatives Considered and Eliminated from Detailed Study	2
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative	5
Partial Wilderness Alternative (Proposed Action)	9
Partial Wilderness Alternative	10
Summary of Environmental Consequences	16
AFFECTED ENVIRONMENT	16
Air Quality	16
Geology	16
Soils	20
Vegetation	20
Water Resources	21
Mineral and Energy Resources	21
Wildlife	25
Forest Resources	25
Livestock and Wild Horses/Burros	25
Visual Resources	26
Cultural Resources	26
Recreation	26
Wilderness Values	26
Land Use Plans and Controls	29
Socioeconomics	29
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	31
Analysis Assumptions and Guidelines for All Alternatives	31
No Action Alternative	31
All Wilderness Alternative	35
Partial Wilderness Alternative (Proposed Action)	38
Partial Wilderness Alternative	41
BIBLIOGRAPHY	45

FIFTY MILE MOUNTAIN WSA

(UT-040-080)

INTRODUCTION

General Description of the Area

The Fifty Mile Mountain Wilderness Study Area (WSA) is located in Kane and Garfield Counties, Utah, on the eastern edge of the Kaiparowits Plateau approximately 20 miles southeast of the Town of Escalante, Utah. Approximately 146,053 acres of the WSA are in Kane County and 90 acres are in Garfield County. The WSA's southern boundary borders Glen Canyon National Recreation Area (NRA).

The WSA's topography is dominated by the Straight Cliffs and Fifty Mile Mountain. The major vegetation type found in the WSA is pinyon-juniper. The WSA contains the Fifty Mile Mountain Archaeological District, which has been nominated to the National Register of Historic Places. The WSA contains 146,143 acres of public land and encloses 12,341 acres of State land. It is managed by the Kanab and Escalante Resource Areas of the Cedar City District.

In general, the climate is temperate and arid with annual precipitation averaging about 10 inches. From June through early September, convection-type thunderstorms advance from the Pacific Ocean off the coast of Mexico and southern California. Frontal-type cyclonic storms out of the northwest move over the area from October through June. The highest precipitation rates occur primarily from November through March.

Summer temperatures in Escalante, Utah range approximately 30 degrees Fahrenheit (F) with highs in the mid 90 degrees and lows in the mid 60 degrees. Winters in Escalante, Utah have a temperature range of about 27 degrees F with highs in the low 40s and lows about 15 degrees F. Snowfall in Escalante averages 28 inches and begins in October or November and ends in March or April.

Specific Issues Identified in Scoping

The issues identified during the study phase for Fifty Mile Mountain WSA are potential mineral development (i.e., coal, uranium, oil and gas, and titanium). Associated with the mineral issue is access to State lands having potential for mineral development. Other minor issues include off-road vehicle (ORV) use, proposed vegetation treatments, archaeological values, and changing of air quality standards.

General issues pertaining to the WSA are discussed in Volume I. Issues and concerns specific to Fifty Mile Mountain WSA raised in the spring of 1984 public scoping meetings (USDI, BLM, 1984) are responded to below.

1. *Comment:* The vast majority of the WSA, almost all of which is outside the Known Recoverable Coal Resource Area (KRCRA), was recommended unsuitable, including some of the best parts of the WSA (Rogers Canyon, Little Valley, and Navajo Canyon). To say that minor quantities of speculative resource outweigh wilderness values is wrong.

Response: During scoping for this Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982b) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

2. *Comment:* Interim management is too restrictive, creates conflicts, and excludes local input to decisions (e.g., Kaiparowits Coal Field).



Response: Interim management of the WSA is a statutory requirement of Section 603(c) of the Federal Land Policy and Management Act (FLPMA).

3. *Comment:* This WSA contains archaeological sites that should be protected by wilderness designation.

Response: The WSA contains numerous archaeological sites. These sites are currently protected under Federal laws including the National Historic Preservation Act. Wilderness designation would eliminate some surface-disturbing activities and possibly eliminate inadvertent destruction of sites.

4. *Comment:* The area offers exceptional wilderness qualities and abundant opportunity for solitude, recreation, and scenery.

Response: It is estimated that the WSA has 69,000 acres of outstanding solitude, 67,000 acres of outstanding primitive recreation, and 19,200 acres of scenic value. These values are further defined in the Wilderness Values, Affected Environment section.

5. *Comment:* Land use conflicts as a result of wilderness designation should be recognized and the area partialled or not designated.

Response: In analyzing the WSA for wilderness designation, significant resource conflicts with potential mineral development and land treatment proposals have been identified. Two partial alternatives that reduce the resource conflicts are analyzed in this document.

6. *Comment:* The oil and gas (mineral) potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be moderate to high. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

During scoping, it was suggested that a partial alternative, which includes Roger's Canyon, Little Valley, and Navajo Canyon, be studied. One of the existing partial alternatives included Roger's Canyon and was modified to include Little Valley and Navajo Canyon.

Alternatives Analyzed

Four alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (146,143 acres); (3) Partial Wilderness (92,441 acres); and (4) Partial Wilderness (51,540 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 146,143-acre Fifty Mile Mountain WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Escalante and Paria Management Framework Plans (MFPs) (USDI, BLM, 1981a and 1981c). The 12,341 acres of State land within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase.

The following are specific actions that would take place under this alternative:

- All 146,143 acres would remain open to mineral location, leasing with standard and special lease stipulations, and sale. Development work, extraction, and patenting would be allowed on 3,254 existing mining claims (65,000 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 Code of Federal Regulations [CFR] 3809) without concern for wilderness values. Existing oil and gas leases (117,800 acres) could be developed under stipulations issued at the time of leasing. Future leases could be developed

FIFTY MILE MOUNTAIN WSA



Map 1
LAND STATUS

Fifty Mile Mountain WSA
UT-040-080

Legend

- WSA Boundary
- Glen Canyon NRA Boundary
- State Land Within or Adjacent to WSA
- National Park Service Administered Land
- BLM Administered Land Within or Adjacent to WSA

SCALE IN MILES
0 1 2 3

SCALE IN KILOMETERS
0 1 2 3 4 5

ELEVATION EXPRESSED IN METERS

FIFTY MILE MOUNTAIN WSA

under leasing Category 1 (standard stipulations) on about 76,300 acres and Category 3 (no surface occupancy) on about 27,500 acres. The remaining 42,343 acres in the WSA would remain closed to oil and gas leasing and 16,550 acres of existing leases would be phased out to meet Category 4 restrictions. Approximately 2,550 unleased acres could be leased for oil and gas. Some 43,300 acres of the Kaiparowits Coal Field (approximately 147 million tons of minable coal) are located in the WSA. Of this amount, 8,400 acres are currently under lease (102 million tons of minable coal) and could be developed under the No Action Alternative under the direction of the MFPs.

- The present domestic livestock grazing use in the WSA would continue as authorized in the MFPs. The 3,133 Animal Unit Months (AUMs) in the WSA would remain available to livestock grazing. Use of the existing range developments (three cabins, 7 miles of fences, one spring development, one reservoir, two corrals, and 1 mile of stock trail) would continue. New range facilities and improvements could be implemented without wilderness considerations. Proposed developments include 7.5 miles of fences and two spring developments.
- Use, maintenance, and development of facilities and improvements for wildlife, water resources, etc. could be allowed if in conformance with the MFP. In addition, it is also proposed in the MFPs to chain and seed 18,900 acres on the benchlands northeast of Willow Gulch and Rogers Canyon to improve mule deer habitat.
- Approximately 106,800 acres in the WSA would remain open to ORV use while ORV use on 39,343 acres would be limited to designated roads and trails. New access roads could be planned and developed in the WSA.
- The entire WSA would remain open to woodland product harvest. Currently, no harvest of forest products occurs nor is any harvest expected in the foreseeable future.
- The entire WSA would continue to be managed under the Visual Resource Management (VRM) Class II as specified in the MFPs.

- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting and fishing would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness consideration to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 146,143 acres of the Fifty Mile Mountain WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of 19 sections of State land (12,341 acres) within the WSA (refer to Map 1) would be likely, and could be authorized by purchase or exchange (refer to Appendix 3). Four of ten State sections adjacent to the WSA likely would be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 146,143 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 65,000 acres of the 3,254 existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with considerations to wilderness values. Existing oil and gas leases

FIFTY MILE MOUNTAIN WSA

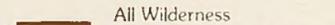
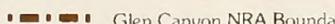
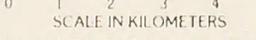
involving about 117,800 acres would not be re-issued upon expiration unless a find of oil or gas in commercial quantities is shown. No new leasing of coal would be allowed. However, the seven existing pre-FLPMA coal leases in the WSA could still be developed according to measures and stipulations determined at lease issuance. If these leases are allowed to expire, they would not be renewed.

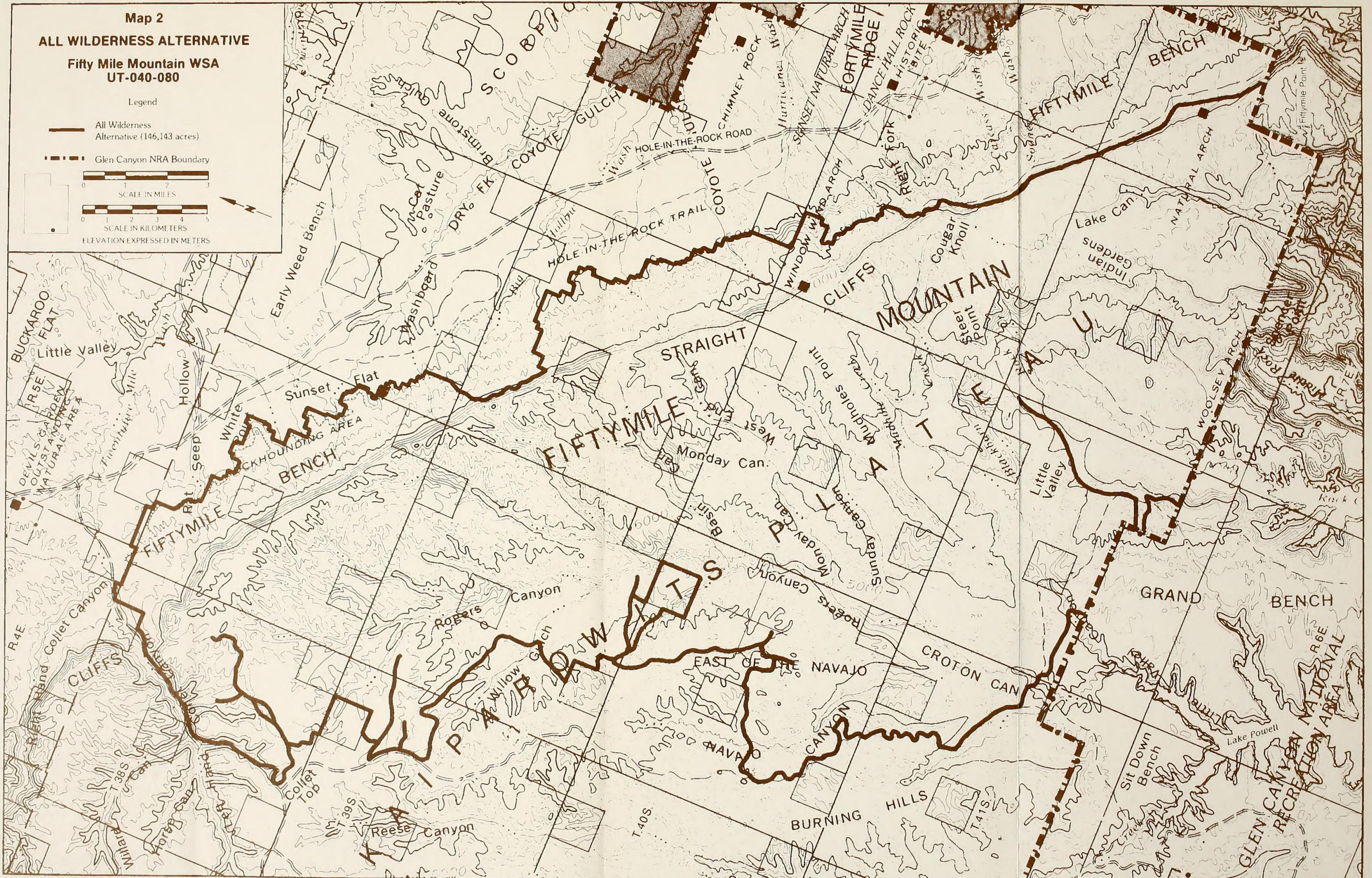
- Present domestic livestock grazing would continue as authorized in the Escalante and Paria MFPs. The 3,133 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (three cabins, 7 miles of fence, one spring development, one reservoir, two corrals, and 1 mile of stock trail) could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for range and/or wilderness resource protection and management, and if consistent with wilderness protection standards (refer to Appendix 1). These include 7.5 miles of fence and two spring developments.
- New water resource facilities or watershed activities (not related to range or wildlife management) would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Fifty Mile Mountain WSA, and none are planned.
- Wildlife transplants or habitat developments would be allowed after designation if compatible with wilderness values. However, the planned 18,900-acre chaining and seeding to improve mule deer habitat would not be allowed.
- The entire 146,143-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. The various “cherry-stemmed” roads would remain open to vehicular travel. The approximately 6 miles of existing vehicular ways in the WSA would not be available for vehicular use except as indicated above. About 27 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 146,143-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or “cherry-stemmed” into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no significant harvest of forest products at the present time, nor is any specifically planned.
- Visual resources in the WSA would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to aerial and hand methods.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

FIFTY MILE MOUNTAIN WSA

Map 2 ALL WILDERNESS ALTERNATIVE Fifty Mile Mountain WSA UT-040-080

Legend

-  All Wilderness Alternative (146,143 acres)
 -  Glen Canyon NRA Boundary
-  SCALE IN MILES
0 1 2 3
-  SCALE IN KILOMETERS
0 1 2 3 4 5
- ELEVATION EXPRESSED IN METERS



FIFTY MILE MOUNTAIN WSA

- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE (92,441 ACRES) (PROPOSED ACTION)

For this alternative, 92,441 acres of the Fifty Mile Mountain WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to identify and analyze as wilderness that portion of the WSA with the most outstanding wilderness values and to eliminate potential management conflicts with coal development. The 53,702-acre area within the WSA but outside of that designated as wilderness under this alternative would be managed in accordance with the Escalante and Paria MFPs as described for the No Action Alternative. The 92,441 acres designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. This alternative likely would involve Federal acquisition of 10 sections of State land (5,942 acres) within the WSA (refer to Appendix 3). Twelve State sections adjacent to the wilderness area likely would be exchanged. Assumptions regarding analysis and impacts for State lands involved in this Partial Wilderness Alternative. The figures and acreages given under this alternative are for Federal lands only.

A summary of specific actions under this alternative follows.

- The 92,441-acre wilderness area would be withdrawn from mineral entry and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on 44,860 acres of the 2,243 existing mining claims,

provided that they are valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Existing oil and gas leases, covering 67,300 acres, would not be re-issued upon expiration unless a find in commercial quantities is shown.

- The 53,702 acres not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of existing mining claims (20,220 acres) and future mining claims could occur if claims are valid. Development of existing oil and gas leases (50,500 acres) and future leases in this area could be allowed without concern for wilderness values. Oil and gas leasing would be managed as Category 1 (standard stipulations) on 49,250 acres and Category 3 (no surface occupancy) on 3,800 acres. About 652 acres would remain closed to leasing (Category 4) and 2,550 unleased acres could be leased for oil and gas. No coal leasing or development would be allowed in the wilderness area. All of the acreage currently under lease is located in the nonwilderness area and could be developed under the guidance of the MFPs. Additional leasing of coal could also occur in the nonwilderness area.
- Domestic livestock grazing would continue to occur in the 92,441-acre wilderness area with 1,647 AUMs remaining available to livestock as presently allotted in the Escalante and Paria MFPs. In the wilderness area, the existing range developments would continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. Any future development that may be proposed would have to meet wilderness protection standards. Within the designated portion of the WSA 7.5 miles of fence and two spring developments are proposed. In the 53,702-acre nonwilderness area grazing use would continue as authorized in the MFPs. This area contains 1,486 AUMs. Existing facilities could be used and maintained and new range developments could be developed without concern for wilderness values. No new improvements are proposed.

FIFTY MILE MOUNTAIN WSA

- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed in the 92,441-acre wilderness area only if enhancing to wilderness values, if necessary to correct conditions that are imminently hazardous to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining 53,702-acre nonwilderness area water resource developments would be allowed if in accordance with the MFPs. None are currently planned.
- In the wilderness area, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the nonwilderness area wildlife transplants or improvements would be allowed with no concern for wilderness values. Approximately 11,000 acres of the planned chaining and seeding to improve mule deer habitat would be located in the wilderness area and would not be allowed. The remaining 7,900 acres would be located in the area not designated wilderness and would be allowed as directed by the MFPs.
- The 92,441-acre wilderness area would be closed to ORV use. There are no ways in the designated wilderness area. The Grand Bench “cherry-stemmed” road would be in the designated wilderness area. The 53,702 remaining acres in the unit, including the existing dirt roads bordering the WSA, would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 92,441-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products in the wilderness would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining area would be open to woodland harvest.
- Visual resources in the wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The area not designated wilderness would be managed as VRM Class II.
- Within the wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least impact to wilderness values. Because of this it is assumed that firefighting would be limited to hand and aerial methods. In the portion of the unit not designated, measures of control could be taken without consideration of wilderness values.
- Gathering information about natural resources would be allowed by permit in the entire WSA. However, in the wilderness area such activity would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternatives exist.
- In the entire WSA hunting would be allowed subject to applicable State and Federal laws and regulations. Use would be limited to nonmotorized means in the wilderness area.
- Throughout the entire WSA, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the wilderness area, however, predator control would only be allowed under conditions that would ensure minimal disturbance to wilderness values. In the wilderness portion, poison baits or cyanide guns would not be allowed.

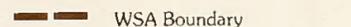
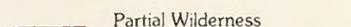
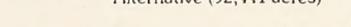
PARTIAL WILDERNESS ALTERNATIVE (51,540 ACRES)

For this alternative, 51,540 acres of the Fifty Mile Mountain WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to identify and analyze the remaining portion of the WSA with the most outstanding

Map 3
PARTIAL WILDERNESS ALTERNATIVE

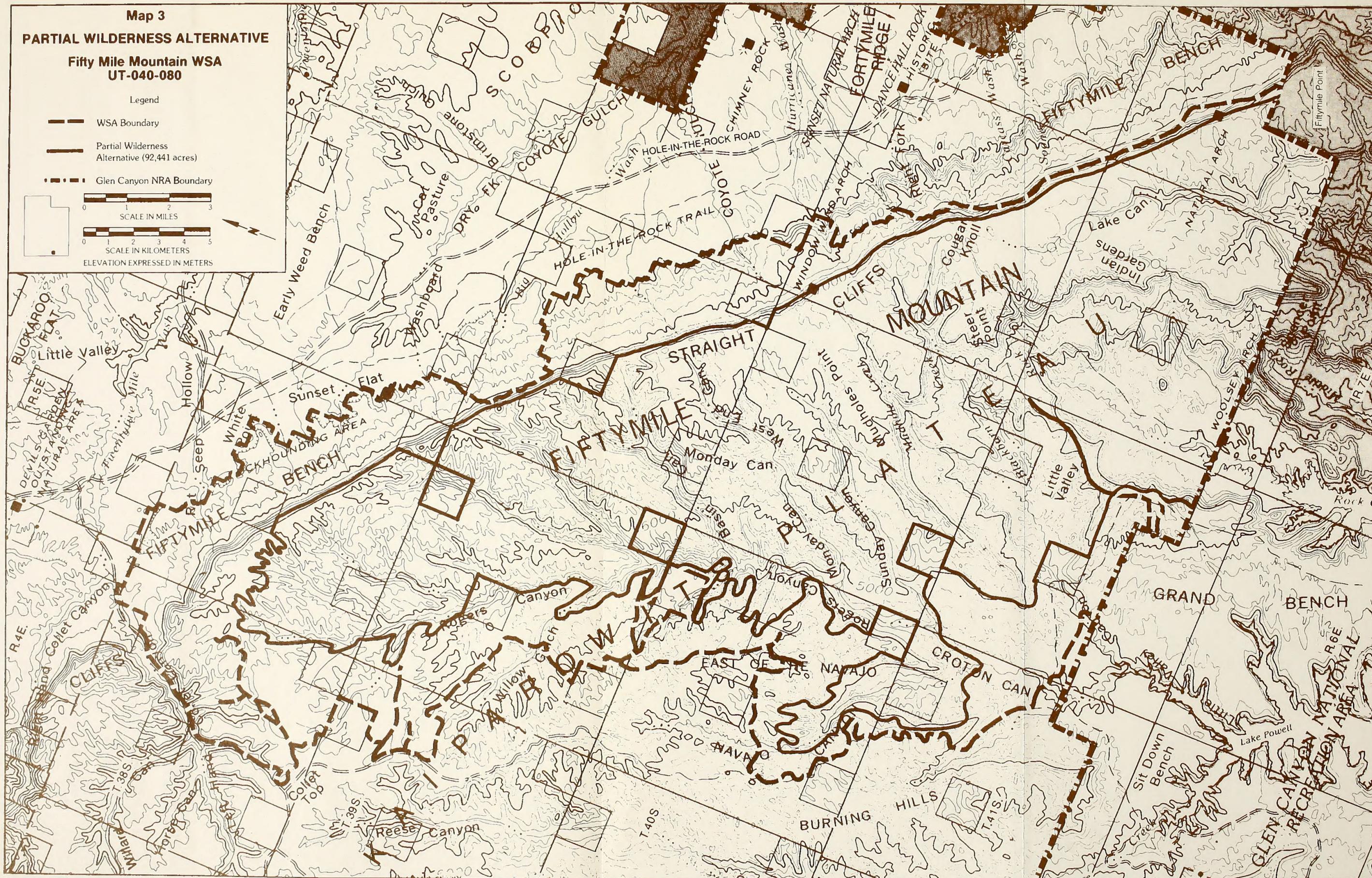
Fifty Mile Mountain WSA
UT-040-080

Legend

-  WSA Boundary
-  Partial Wilderness Alternative (92,441 acres)
-  Glen Canyon NRA Boundary



ELEVATION EXPRESSED IN METERS





wilderness values and to further reduce or eliminate potential conflicts with coal and uranium development. The 94,603-acre area within the WSA but outside of that designated as wilderness would be managed in accordance with the Escalante and Paria MFPs as described for the No Action Alternative. The area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative.

Upon designation, acquisition of three sections of State land (3,200 acres) within the wilderness area would be likely and could be authorized by purchase or exchange. One of five State sections adjacent to the wilderness area likely would be exchanged. Assumptions regarding analysis and impacts for State lands are the same as described for the All Wilderness Alternative. The figures and acreages given under this alternative are for Federal lands only.

A summary of specific actions follows:

- The 51,540-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on 16,800 acres of existing mining claims, provided they are valid. Development would be regulated by unnecessary or undue degradation regulations (43 CFR 3809) with consideration of wilderness values. The existing oil and gas leases, covering 45,980 acres, would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. The 94,603-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of existing (48,280 acres) and future mining claims could occur in the area if claims are valid. Development of existing oil and gas leases (71,820 acres) and future leases could be developed without concern for wilderness values. The area not designated would be managed as oil and gas leasing Category 1 (standard stipulations) on 64,148 acres and Category 3 (no surface occupancy) on 27,500 acres. About 2,955 acres would remain closed to leasing (Category 4) and 2,550 unleased acres could be leased for oil and gas. No coal leasing or development would be allowed in the wilderness area. All of the acreage currently under lease for coal development is in the nonwilderness area and could be developed under the guidance of the MFPs.
- Domestic livestock grazing would continue to occur in the 51,540-acre wilderness area. The 920 AUMs would remain available to livestock as presently allotted. The use and maintenance of range developments located in the wilderness area could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for range and/or wilderness resource protection and management, and if consistent with wilderness protection standards. In the 94,603-acre nonwilderness area grazing use would continue as authorized in the MFPs (2,213 AUMs). New range developments as previously described could be developed in this area without concern for wilderness values.
- New water resource facilities or watershed activities would be allowed in the 51,540-acre wilderness area only under the conditions described in the All Wilderness Alternative. In the remaining 94,603 acres, water resource facility developments would be allowed if in accordance with the MFPs.
- In the wilderness area, wildlife transplants or habitat improvements would be allowed if they are compatible with wilderness values. In the nonwilderness area, wildlife transplants or improvements would be allowed without wilderness considerations. None of the proposed land treatments are located in the wilderness designated area. The proposed 18,900 acres of land treatment would be located in the area not designated wilderness and would be allowed as directed by the MFPs.
- The wilderness area would be closed to ORV use. No ways or "cherry-stemmed" roads are located in the wilderness designated area. The remainder of the unit would remain open to vehicular travel, including possible development of new road access.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 51,540-acre wilderness. As part of that plan, it is assumed that a

maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.

- Harvest of forest products in the wilderness area would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining acres would be open to woodland harvest.
- Visual resources in the 51,540-acre wilderness area would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 94,603 acres would be managed as VRM Class II.
- Measures to control fire, insects, noxious weeds, or disease would be allowed in the entire WSA. However, within the wilderness area such action would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that fires would be controlled only by hand or aerial methods in the designated wilderness area.
- In the entire WSA any activity for the purpose of gathering information about natural resources would be allowed by permit. In the wilderness area such activity would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures.
- Hunting would be allowed in the entire WSA subject to applicable State and Federal laws and regulations. In the wilderness area, this use would be limited to nonmotorized means.
- Throughout the entire WSA control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the wilderness area, poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences that would result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Unless otherwise indicated, the information for this section is taken from the Escalante and Paria Unit Resource Analyses (USDI, BLM, 1979a and 1979b) and other BLM technical reports and documents.

Air Quality

The Fifty Mile Mountain WSA and surrounding area have a Class II Prevention of Significant Deterioration (PSD) classification under the Clean Air Act Amendments of 1977. The BLM will not consider or recommend any change in air quality classification as part of the wilderness study or wilderness recommendations. Any further air quality reclassification is the prerogative of the State government, not of the BLM. The nearest Class I area is Capitol Reef National Park located approximately 24 miles northeast of the WSA.

No measurements of air pollution or visibility levels have been made in the Escalante Planning Unit. Data collected from various sites such as Page, Arizona (approximately 24 miles southwest of the WSA) and Four Mile Bench, Kane County, Utah indicate the air is generally free of pollutants and within National Ambient Air Quality Standards and State regulations. Visibility is excellent.

Geology

Rocks of Cretaceous and Jurassic Ages, totaling approximately 3,000 feet in thickness, outcrop in the WSA. The Cretaceous Straight Cliffs Formation forms the most extensive outcrop in the WSA, consisting predominantly of interbedded yellow-gray sandstone, mudstone, and coal. The Cretaceous Tropic Shale and Dakota Sandstone Formations form slopes under the Straight Cliffs along the eastern part of the Straight Cliffs along

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FIFTY MILE MOUNTAIN WSA

Resource	Alternatives		
	No Action	All Wilderness (146,143 Acres)	Partial Wilderness Designation (92,441 Acres) (Proposed Action)
Geology	Underground coal mining on 30 percent of the WSA could result in subsidence and fracturing of formations.	Underground coal mining would not be allowed.	Underground coal mining on 19 percent of the WSA could result in subsidence and fracturing of formations.
	The quality and flow of ground water could be reduced by underground coal mining.	Underground mining would not be allowed and water quality and flow would be maintained.	Effects would be about the same as for the No Action Alternative.
	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 1,709 tons of uranium oxide. There is a high potential for development of 147 million tons of coal.	Oil, gas, and coal likely would not be recovered. Assuming a worst-case analysis, uranium recovery also would be foregone. Due to the low likelihood of recovery of oil and gas and uranium, however, the loss of development opportunity would not be significant. Loss of coal recovery could be significant over the long term.	Up to 1 million barrels of oil, 7 billion cubic feet of natural gas, 102 million tons of coal, and 385 tons of uranium oxide could be recovered.
Mineral and Energy Resources	About 2 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. Land treatment on 13 percent of the WSA would benefit wildlife.	Wildlife would benefit from solitude. The proposed land treatment for wildlife habitat would not be allowed, however.	Effects would be about the same as for the 92,441-acre Partial Wilderness Alternative, except that land treatment to benefit wildlife habitat would be allowed on 18,900 acres in the nondesignated portion.
	Grazing of 3,133 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of two spring developments and 7.5 miles of fence, could be constructed.	Grazing of 3,133 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. Proposed new developments might not be allowed.	Effects would be about the same as for the All Wilderness Alternative.
Livestock	Grazing of 3,133 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of two spring developments and 7.5 miles of fence, could be constructed.	Grazing of 3,133 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. Proposed new developments might not be allowed.	Effects would be about the same as for the All Wilderness Alternative.

**TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FIFTY MILE MOUNTAIN WSA**

Resource	Alternatives		
	All Wilderness (146,143 Acres)	Partial Wilderness Designation (92,441 Acres) (Proposed Action)	Partial Wilderness Designation (51,540 Acres)
Visual Resources	<p>The quality of visual resources could be impaired on up to 21,265 acres, including 2,365 acres disturbed by mineral-related activities.</p>	<p>Visual quality could be impaired on 1,525 acres (including 25 acres in the designated portion). About 68 percent of the Class A scenery would be within the designated portion and would be protected by the reduced potential for disturbance. In the nondesignated portion, 7,900 acres would be disturbed by land treatment for wildlife.</p>	<p>Visual quality could be impaired on up to 2,144 acres (including 14 acres in the designated portion). About 38 percent of the Class A scenery would be within the designated portion and would be protected by the reduced potential for disturbance. In the nondesignated portion, 18,900 acres would be disturbed by land treatment for wildlife.</p>
Recreation	<p>ORV use would continue on 6 miles of ways at current low levels. Overall recreational use could increase from the present 150 visitor days per year to 224 over the next 20 years. Up to 2,365 acres of mineral-related disturbance could reduce the quality of primitive recreation.</p>	<p>ORV use could continue on 6 miles of ways in the undesignated portion.</p>	<p>Effects would be about the same as for the 92,441-acre Partial Wilderness Alternative.</p>
Wilderness Values	<p>Wilderness values could be lost on up to 21,265 disturbed acres (15 percent of the WSA), which could affect wilderness values throughout the WSA.</p>	<p>Wilderness values would be protected, except on up to 40 acres (less than 1 percent of the WSA) which may be disturbed by the development of valid mineral rights.</p>	<p>Wilderness values would be protected, except on 14 acres which could be disturbed by development of valid mineral rights. Additional impairment could be expected on 22 percent of the 94,603 acres not designated. Overall, wilderness values could be lost on 14.5 percent of the WSA. However, 75 percent of the area meeting the standards for solitude, 77 percent of the area meeting the standards for primitive recreation, and 35 percent of the area meeting the standards for naturalness would be in the designated portion and would be protected by reduced potential for disturbance.</p>

TABLE 1 (CONTINUED)
 SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
 FIFTY MILE MOUNTAIN WSA

Resource	Alternatives		
	No Action	All Wilderness (146,143 Acres)	Partial Wilderness Designation (92,441 Acres) (Proposed Action)
Land Use Plans and Controls	<p>This alternative would generally be consistent with the Kane and Garfield County Master Plans, State of Utah plans and policies, and the current BLM Escalante and Paria MFPs. It would not complement the NPS proposal for nearby wilderness.</p>	<p>This alternative would not be consistent with Kane and Garfield Counties' concepts of multiple use. It would be consistent with State policy if lands were exchanged, and would complement the NPS proposal for wilderness. Designation would constitute amendments of the BLM Escalante and Paria MFPs.</p>	<p>Partial designation would be the same as the All Wilderness Alternative, except that it would not entirely complement the NPS proposal for wilderness.</p>
Socio-economics	<p>Annual local sales of less than \$388,675 and Federal revenues of up to \$382,986 would continue. Even though 16,550 acres of oil and gas leases would be phased out to meet Category 4 restrictions, up to an additional \$62,700 annually in Federal revenues could be realized through leasing of oil and gas and coal. Coal development could take place and would significantly affect the economies of Kane and Garfield Counties.</p>	<p>Annual local sales of less than \$388,675 and Federal revenues of up to \$4,386 would continue, but annual Federal revenues of up to \$441,300 would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.</p>	<p>The effects of this alternative would be similar to those of the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$197,250 as compared to the No Action Alternative, and coal development could take place and would significantly affect the economies of Kane and Garfield Counties.</p>
			<p>Partial Wilderness Designation (51,540 Acres)</p> <p>Consistency would be about the same as with the 92,441-acre Partial Wilderness Alternative.</p> <p>The effects of this alternative would be similar to those of the 92,441-acre Partial Wilderness Alternative. Federal revenues would be reduced by up to \$32,706 as compared to the No Action Alternative, but coal development could take place and would significantly affect the economies of Kane and Garfield Counties.</p>

FIFTY MILE MOUNTAIN WSA

the eastern part of the WSA. The Jurassic Morrison Formation crops out in a continuous belt along the base of the Straight Cliffs.

Three prominent structural axes (the Collet, Rees Canyon, and Rock Creek anticlines) traverse portions of the WSA in a roughly north-south direction (Doelling and Graham, 1972). The southernmost 10 miles of the 40-mile-long south-plunging Collet anticline are located in the northern portion of the WSA. Approximately 15 miles of the 20-mile-long south-plunging Rees anticline are located along the western side of the WSA. The northernmost 10 miles of the 30-mile-long doubly plunging Rock Creek anticline are located in the southern part of the WSA. No major faults are known to occur within the WSA.

The Fifty Mile Mountain WSA lies within the Canyonlands section of the Colorado Plateau Physiographic Province. Fifty Mile Mountain is a unique, distinctive landform within this province. The WSA consists of several canyon systems cut into the Kaiparowits Plateau as well as a section of the Straight Cliffs. The southwest side of Fifty Mile Mountain is incised by numerous drainages all flowing in south or southwest directions. The Straight Cliffs run in a northwest-southeast direction and form the eastern boundary of the WSA. Window Wind Arch occurs on the edge of the Straight Cliffs, and Woolsey Arch is located in Rock Creek basin. Elevation varies from a little less than 4,000 feet above sea level in Little Valley in the southwestern corner of the WSA to about 7,650 feet along the Straight Cliffs in the southeastern part of the WSA.

Soils

The major part of the WSA consists of Rockland and Badland soils. These occur in the canyons, the southwest part of the WSA, and along the Straight Cliffs. Barren sandstone rock, shale, or interbedded sandstone and shale make up about 50 to 75 percent of these land types. Shallow to very shallow loamy soils make up about 20 to 40 percent, and 5 to 10 percent are loamy deep to moderately deep soils. Runoff is mainly rapid and very rapid. Sediment yield is high. Erosion condition was determined by using soil surface factors as summarized in Table 2 (terms are defined in the Glossary).

The upland parts, benches, and ridges are mainly shallow and moderately deep loamy soils over bedrock or shale. Rock outcrop is common. Runoff is mainly medium and rapid.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	21,924	15	59,190
Moderate	1.3	94,992	65	123,490
Slight	0.6	26,305	18	15,780
Stable	0.3	2,922	2	880
Total		146,143	100	199,340

Sources: USDI, BLM, 1979a and 1979b; Leifeste, 1978.

Vegetation

The major existing vegetation types in the WSA include pinyon-juniper, desert shrub, and sagebrush. Table 3 shows the major existing vegetation types and indicates their acreages and percent within the WSA.

TABLE 3
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Desert shrub	36,536	25
Pinyon-juniper	87,686	60
Sagebrush	21,921	15
Total	146,143	100

Sources: USDI, BLM, 1979a and 1979b.

Pinyon-juniper is the most common vegetation type in the WSA. This type occurs primarily on Fifty Mile Mountain with the major species being pinyon pine and juniper. Atwood beard-tongue (*Penstemon atwoodii*) is a sensitive plant species known to occur in the upper Rogers Canyon area. There are no known threatened and endangered plants within the WSA (Welsh, 1979). Small areas of riparian vegetation are found in Roger's Canyon and a small pond in Lake Draw.

Communities of aspen, maple, and oak occur in some of the canyons. Stands of aspen also occur on top of Fifty Mile Mountain (Steer Point and Buck Ridge). Desert-shrub type vegetation occurs in the southwest corner of the WSA (Rock Creek, Little Valley, Croton, and Lower Rogers Canyon). Major species in the desert-shrub type include juniper, sandsage, and Brigham tea. West-End Point and Steer Point benches are primarily sagebrush.

FIFTY MILE MOUNTAIN WSA

The Fifty Mile Mountain WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978a). The potential natural vegetation (PNV) types of the WSA are juniper-pinyon woodland, 102,343 acres, and saltbrush-greasewood, 43,800 acres. PNV is the vegetation types that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The WSA does not contain any perennial streams, except in a portion of Rogers Canyon. One small, seasonal pond (approximately 2 acres) occurs in Lake Draw. Major drainages in the WSA include Rogers Canyon, Croton Canyon, Basin Canyon, Monday Canyon, Little Valley, and Rock Creek. These washes may flow from July through mid-September in response to the thunderstorm season.

Generally, the water quality of surface runoff is poor due to the chemical composition of the area's parent material (slightly saline). The quality of runoff from Croton Canyon is very poor due to high total dissolved solids (TDS), notably sulfates, arsenic, lead, and manganese.

Thirty-four small seeps/springs exist in the WSA. Ground water throughout the WSA is considered slightly saline (500 to 3,000 milligrams of TDS per liter). It is not known if this water is potable for human consumption. The only water use is for livestock.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA in Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 3+ was assigned to the Fifty Mile Mountain WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The 3+ rating was assigned primarily because of the known coal deposits within the area. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed loca-

tion of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The energy and mineral resource rating summary is given in Table 4.

TABLE 4
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c3	Less than 500 tons of uranium oxide ³
Coal	f4	c4	147 million tons
Geothermal	f1	c1	None
Hydroelectric	f1	c4	None
Gold	f2	c1	Little to none
Silver	f2	c1	Little to none

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

³Two areas in the WSA have a higher certainty to contain small deposits of uranium - Cat Pasture, 32,000 acres (700 tons), and Fifty-Mile Point, 500 acres (509 tons). Therefore, the WSA could contain up to 1,709 tons of uranium oxide.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of titanium and silver that are currently listed as strategic and critical minerals (Federal Emergency Management Agency, 1983).

FIFTY MILE MOUNTAIN WSA

LEASABLE MINERALS

Oil and Gas

The oil and gas capabilities of the region, including the Fifty Mile Mountain WSA, have been reviewed by Heylman (1965), Kunkel (1965), Doelling (1975), and SAI (1982). According to these reports there is no evidence indicating the existence of commercially recoverable oil and gas resources within the WSA. To date no exploratory wells have been drilled within the WSA, and as a result, no direct data exist to establish whether or not economic deposits of oil and gas occur in the WSA. Based on similarities between this WSA and the closest oil-producing formations in the Upper Valley Oil Field, which lies 20 miles to the northwest, SAI considers the oil and gas favorability to be limited to small oil and gas pools (f2) with a low certainty of occurrence (c1).

Structures geologically favorable for oil and gas within the WSA include the Rees and Rock Creek anticlines and the southern-plunging part of the Collet anticline. Two wells have been drilled along the Rees Canyon anticline approximately 0.5 mile from the west border of the WSA. One of the wells penetrated Cambrian rocks at a total depth of 10,045 feet, and the other penetrated the Mississippian Redwall Limestone at a total depth of 9,017 feet. No oil shows were reported from either well (Kunkel, 1965).

The Collet anticline was tested 16 miles north of the WSA (Kunkel, 1965), which would place it in the structurally high portion of the anticline. This well penetrated the Molas Formation (Lower Pennsylvanian) at a depth of 4,303 feet and oil shows have been reported in the Kaibab Limestone at a depth of 1,540 to 1,545 feet. It is unlikely that oil and gas in commercial quantities exist along the southern part of the Collet anticline based on only a showing of oil along the structurally highest part of the anticline. However, the possibility exists for oil displacement to the south within the Kaibab Formation in this region.

The Rock Creek anticline has not been tested. It is considered by SAI (1982) to be favorable for the occurrence of small oil and gas deposits. In addition to structural traps, the WSA may have some potential for oil and gas in stratigraphic and paleogeomorphic traps.

Based largely on a comparison between the WSA and the Upper Valley Field 20 miles to the west, SAI (1982) considers the WSA to have potential only for small oil and gas pools, with the untested Rock Creek anticline being the most favorable

structure. The potential for other structures within the WSA to contain oil and gas deposits is low. This is a result of both unsuccessful drilling attempts (along the Rees Canyon anticline) and unfavorable structures (downdip portion of southward-plunging anticline). Accordingly, the WSA has the potential for a small oil and gas field to occur along the Rock Creek anticline in the southern portion of the WSA. This field is estimated to contain less than 10 million barrels of oil or, if gas, no more than 60 billion cubic feet (refer to Appendix 6 for recoverability estimates). A field of this size in Utah typically covers approximately 2,500 acres with actual surface disturbance (drill pads and roads) of about 160 acres.

Under the current MFP, 42,343 acres are closed or suspended to oil and gas leasing (Category 4) and 27,500 acres are open to leasing but closed to surface occupancy (Category 3). A total of 76,300 acres within the WSA are open to oil and gas leasing subject to the standard use and wilderness stipulations (Category 1). There are presently 127 oil and gas leases covering 117,800 acres of the WSA. Of these, 38 leases representing 24,400 acres are pre-FLPMA. The remainder were leased after October 21, 1976. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases which are producing oil or gas prior to their original expiration date or those which are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Coal

The Fifty Mile Mountain WSA lies on the eastern side of the Kaiparowits Coal Field, and most of the tract is underlain by the coal-bearing Cretaceous Straight Cliffs Formation. Other minor coal-bearing rocks occur in the Dakota Sandstone and Tropic Shale, which crop out in the southern part of the WSA.

Estimated coal reserves within the entire Kaiparowits Field total 15.2 billion tons (Doelling and Graham, 1972). A total of 43,300 acres (29 percent of the WSA) containing approximately 147 million tons of minable coal (based on coal seams greater than 4 feet) occur within the WSA. This amounts to less than 1 percent of the coal within the Kaiparowits Field. All of these coal seams are within the Straight Cliffs Formation and include, from oldest to youngest, the Christensen, Rees, and Alvey coal zones (Doelling and Graham, 1972). In the northern and southern parts of the WSA, individual coal beds as much as 14 feet thick have been measured in the Christensen and Alvey coal zones (Doelling and Graham, 1972). All of the coal zones thin to the east across the WSA.

Part of the WSA is within the Kaiparowits KRCRA which corresponds roughly with the minable coal area. In accordance with the underground mining exemption to the unsuitability criteria (43 CFR 3461.2 [a]) the area in the KRCRA within the WSA was not assessed as unsuitable for mining (USDI, BLM, 1981a and 1981c).

There are presently seven coal leases covering 8,400 acres. This acreage includes approximately 5.7 percent of the WSA and 19 percent of the minable coal area. The leased acreage contains 70 percent (102 million tons) of the estimated reserve in the WSA and these leases were all issued in 1967 (pre-FLPMA). The unleased acreage is estimated to contain 45 million tons of coal, or about 30 percent of the minable coal in the WSA. About one-third to one-half of the coal would be recoverable.

Based on the above discussion, SAI has assigned the WSA a coal favorability rating of high (f4) and a certainty of occurrence rating of high (c4). It is difficult to determine the specific areas where actual coal operation would occur. Obviously, the majority of development would be associated with existing leases since they account for about 70 percent of the coal. According to the *Kaiparowits Project EIS* (USDI, BLM, 1976), an underground mine complex in this area would typically disturb about 500 acres. Developmental drilling, especially for detailed delineation of a deposit,

could require significantly more surface area than actual mining operations. This would depend largely on the size and complexity of the potential deposit and how much drilling would be involved.

However, according to the SAI, development of Kaiparowits Plateau coal will face significant economic and environmental problems. These problems include poor accessibility, lack of abundant water, high costs of underground mining, and competition from nearby areas in central Utah, northeast Arizona, and northwest New Mexico where coal is more readily available and of better quality.

Geothermal

No geothermal resources are known to occur within or near the WSA. According to SAI (1982), the geothermal favorability of the WSA is low (f1) with a certainty of occurrence rating of low (c1).

Most investigators consider recent crustal instability, high heat flow, and young igneous rocks (less than 1 or 2 million years old) as important criteria for a geothermal resource of commercial proportion. No hot springs or young igneous rocks are known to occur within or near the vicinity of the WSA. The nearest thermal spring to the WSA is approximately 40 miles to the northeast, and it discharges at a temperature of 20 degrees Centigrade (C) (National Oceanic and Atmospheric Administration, 1979). Geothermal leasing is currently prohibited in the WSA.

LOCATABLE MINERALS

Uranium

The Triassic Chinle Formation and the Jurassic Morrison Formation are the only rock units within the WSA considered favorable for uranium in south-central Utah. According to Bendix (1976), both the Chinle and Morrison Formations are relatively unfavorable uranium host rocks in the Kaiparowits Plateau region. This conclusion was based largely on the high sandstone-to-mudstone ratios, the lack of organic matter, and the wide lateral continuity of the sandstones, especially in the Morrison Formation. Bendix (1976) also points out that, although the small amount of mudstone in the Morrison does not preclude uranium mineralization, deposits found in similar environments nearby, such as in the Henry and Carrizo Mountains, tend to be small and highly localized. Small deposits of this type are economical to extract only when exposed in outcrop or when closely grouped.

The Morrison Formation outcrops in a continuous belt near the base of the Straight Cliffs. No

uranium mines are reported in the WSA from within this outcrop belt. Throughout most of the WSA, however, the Morrison Formation lies at a depth of about 700 feet. According to SAI (1982) the Morrison has been removed by pre-Dakota erosion a short distance west of the WSA. The U.S. DOE (1983) believes the Morrison within the WSA to be favorable for the occurrence of small economic deposits of uranium.

The Chinle Formation lies at depths generally exceeding 3,500 feet (Hintze, 1973). Due to the depth of this formation and the indication that deposits are small, the U.S. DOE (1983) believes that the potential is low for economic deposits of uranium in the Chinle within the WSA.

In relation to minerals, possible resource areas are defined by U.S. DOE (1983) as those areas where potential resources are estimated to occur in undiscovered or partly defined deposits in formations or geologic settings productive elsewhere within the same geologic province. According to U.S. DOE (1983), two areas within the WSA have a relatively high certainty (c4) to possibly contain small deposits of uranium (f2). The Cat Pasture possible resource area includes approximately 32,000 acres and is located primarily north of Basin Canyon and extends northerly into the eastern tributaries of Rogers Canyon. It also includes Fifty Mile Bench. The U.S. DOE (1983) has estimated that the Cat Pasture possible resource area has a 50-percent probability to contain about 700 tons of uranium oxide at a minimum grade of 0.01 percent.

The Fifty Mile Point possible resource area includes approximately 500 acres of the WSA in the vicinity of Fifty Mile Point. The U.S. DOE (1983) has estimated that the Fifty Mile Point possible resource area has a 50-percent probability to contain about 509 tons of uranium oxide at a minimum grade of 0.01 percent.

Based on the U.S. DOE's estimate of 0.01-percent minimum grade and 6-meter average thickness, the areal extent of each possible deposit is estimated to be approximately 100 acres. The possible deposits would occupy 0.3 percent of the Cat Pasture and 20 percent of the WSA portion of the Fifty Mile Point possible resource areas. The remainder of the unit is considered favorable for small deposits (f2/c3).

Actual development operations for an ore body in these possible resource areas would be by underground methods and would involve very little surface area. Mines of this size typically require only one or two air vents on the surface.

Portal location would ideally be situated at the base of the Straight Cliffs but would depend, of course, on the location of the possible ore body.

Developmental drilling, especially for detailed delineation of an ore body, could require significantly more surface area than actual mining operations. This would depend largely on the size and complexity of the possible ore body and how much drilling would be involved.

A total of 3,254 mining claims are presently associated with the WSA. There are 3,212 claims entirely within the WSA and 42 located partially in the WSA. Two hundred forty-two claims were located prior to October 21, 1976. The remaining 3,012 claims were located after October 21, 1976. It is not known if any of these claims have valid discoveries. Based on the favorability of the Morrison Formation for uranium, it is possible that all have been located for uranium.

In 1979, Exxon Mineral Company carried out a drilling operation for uranium adjacent to the WSA along the Fifty Mile Bench below the Straight Cliffs in Township 39 South, Range 6 East, Sections 4, 5, 6, and 9. In 1980, Exxon conducted an exploratory drilling operation in the Rogers Canyon area of the WSA, Township 39 South, Range 5 East, Sections 21, 22, 27, and 35.

In 1981, Exxon and Gulf Mineral Resource companies both submitted plans of operation to conduct uranium exploration within the northern end of the WSA. The companies then withdrew their plans of operation. They indicated that their decision to withdraw was based on current market conditions for uranium and that the projects had not been abandoned.

Other Minerals

No prospects or mines for metalliferous deposits are known to exist in the WSA. It is not known how many of the mining claims located in the WSA are located for minerals other than uranium. Some of these claims may be located for titanium in Sections 18 and 19 of Township 40 South, Range 6 East, and Sections 24 and 13 of Township 40 South, Range 5 East. Titanium is included on the list of Strategic and Critical Materials (Federal Emergency Management Agency, 1983). A titaniferous sand outcrop occurs at the base of the John Henry Member of the Straight Cliffs Formation. Numerous claims are located along the outcrop. None of these claims show any indications of development activity.

Wildlife

The Fifty Mile Mountain has habitat that could support approximately 45 species of mammals, 125 species of birds, 17 species of reptiles, and three amphibians. Thirteen species of raptors are known or suspected of nesting in the WSA. No fish exist in the WSA. No crucial habitat has been identified. Game species in the WSA are mule deer, cougar, cottontail rabbits, and mourning doves. Mule deer are common yearlong residents, and altitudinal migrations of deer from higher bench areas to canyons occur during the winter. Small numbers of cougar are yearlong residents of the WSA. Cottontails occur throughout the area, and mourning doves are fairly common throughout the area from May to September. Water is a limiting factor on wildlife population throughout most of the WSA.

Approximately 32 desert bighorn sheep were transplanted into the Rock Creek area of Glen Canyon NRA in 1981 and 1982 by the Utah Division of Wildlife Resources (UDWR). As the herd size increases it is likely that a few sheep will move into the southern end of the WSA.

Two endangered species, the peregrine falcon and bald eagle, have been recorded within the WSA as migrants. Both species are present along Lake Powell and can be expected to migrate through the WSA. There is no Federally designated or other critical habitat in the WSA.

The UDWR (1982) list of sensitive species includes three species that occur in the WSA: Lewis woodpecker and the western and mountain bluebirds.

No wildlife facilities exist within the WSA. However, approximately 18,900 acres of chaining and seeding have been proposed in the Escalante and Paria MFPs for the benches north and east of Willow Gulch and Rogers Canyon in Range 4, 5, and 6 East and Township 38 and 39 South. These projects are potential improvements to mule deer habitat, but are not of high priority at this time. There are two small areas with riparian vegetation in Rogers Canyon and a small pond in Lake Draw.

Forest Resources

Forest resources in the WSA are limited to the pinyon pine and juniper trees that occur on 87,686 acres of the WSA. The entire WSA is open to fuelwood collecting but, due to limited access and the remoteness of the area, use has been minimal and undoubtedly will continue to be so.

Livestock and Wild Horses/Burros

The WSA contains portions of five livestock grazing allotments. Table 5 summarizes livestock (cattle) use in the WSA. Table 6 identifies existing and proposed range improvements in the WSA.

There are no wild horses or burros in the WSA.

**TABLE 5
Livestock Grazing Use Data**

	Allotments						Total
	Forty-Mile Ridge	Last Chance	Lake	Lower Cattle	Rock Creek-Mudholes	Unallotted	
Total Acres	45,111	253,522	23,441	83,049	111,267		
Acres in WSA	6,946	66,338	17,607	8,814	37,777	8,661	146,143
Suitable ¹ Acres in WSA	6,606	8,249	13,379	8,814	21,748	—	58,976
Unsuitable ¹ Acres in WSA	340	57,909	4,228	—	16,019	8,661	87,167
Grazing Preference in WSA (AUMs)	208	407	1,151	171	1,196	—	3,133
Percent of Active Preference Within WSA	9	13	88	3	51	—	
Permittees Using WSA	3	1	2	7	1	—	14

Sources: USDI, BLM, 1979a and 1979b.

¹The suitability of an area for grazing is determined by a number of factors including steepness of the terrain, distance of forage from water, production of vegetation, etc. If the area does not meet these minimum requirements, it is listed as unsuitable for grazing, and any available forage is not allocated for domestic livestock grazing.

**TABLE 6
Existing and Proposed Livestock
Grazing Management Projects**

Allotment	Existing Improvements	Proposed Improvements
Forty-Mile Ridge	None	None
Last Chance	Cabin, 0.75 Mile of Fence	None
Lake	1 Spring Development, 2 Cabins, 1 Corral, 1 Reservoir, 2 Miles of Fence	5 Miles of Fence, 2 Spring Developments
Lower Cattle	None	None
Rock Creek-Mudholes	1.25 Miles of Stocktrail, 4 Miles of Fence, 1 Corral	2.5 Miles of Fence

Sources: USDI, BLM 1979a and 1979b.

Visual Resources

The WSA possesses a variety of landscape characters and features. The BLM visual resource inventory classified approximately 135,343 acres as exceptional (Class A) and 10,800 acres as high to moderate quality (Class B) scenery. The entire WSA is a VRM Class II Management Area (USDI, BLM, 1981a and 1981c). (Refer to Appendix 7 for a detailed description of BLM's VRM system.) In the Glen Canyon NRA Wilderness Proposal (USDI, National Park Service [NPS], 1979), the NPS evaluated the various areas of landscape character and assigned a value class of II (superior) to the Straight Cliffs and Rock Creek Basin clifflines, which extend across the WSA/NPS boundary. The top of the Fifty Mile Mountain, the Rock Creek peninsula, and Croton Bench, basically pinyon-juniper-covered plateaus, are Value Class IV (unremarkable). The Fifty Mile Bench and Rock Creek Basin are Value Class III (interesting). For a further description of scenic values in the WSA, refer to the Wilderness Values section under Affected Environment.

Cultural Resources

The WSA contains hundreds of archaeological sites of scientific value. Most of these are Kayenta Anasazi in origin and date between 900 and 1100 A.D. The sites are largely structural and consist of habitations and granaries.

The more significant of these sites have been nominated to the National Register of Historic Places as the Fifty Mile Mountain Archaeological District. This district includes over 300 sites on the top and cliffs of the mountain. Fifty Mile Mountain was a major subject of investigation during the conduct of *Archaeological Excavations—Lower Glen Canyon* (Long, 1966). The plateau's strategic location as the prominent upland in immediate proximity to Glen Canyon makes it an important area from which occupational patterns and chronologies in the greater Glen Canyon region can be determined.

Recreation

The Fifty Mile Mountain WSA offers outstanding opportunities for backcountry recreation activities such as hiking, backpacking, and sightseeing. There is no visitor use attributed to hunting. Although there is great potential for horseback riding opportunities, current use is low.

Current use is limited to groups and individuals taking extended backcountry trips on Fifty Mile

Mountain, and probably amounts to three or four trips per year. At the present time the Kanab and Escalante Resource Areas receive only a few inquiries each year concerning the WSA's recreation potential. No data are available on visitor use. Estimates are 50 visits and 150 visitor days per year. Ninety percent (135 visitor days) of the use is for primitive recreation and the other 10 percent (15 visitor days) could be associated with ORV use.

Exploration and sightseeing at the archaeological sites on Fifty Mile Mountain and the Straight Cliffs are potential recreation pursuits. ORV use is limited to designated roads and trails on approximately 39,343 acres of Fifty Mile Mountain.

ORV use is open on approximately 106,800 acres. Use in the open area, however, is limited to "cherry-stemmed" roads and trails on the periphery of the unit and accessible areas adjacent to these roads. Due to the topography and the remote location of the WSA, actual ORV use is practically nonexistent. Actual ORV use in the WSA is very limited due to the lack of roads and trails.

Wilderness Values

SIZE

The 146,143-acre WSA is one of the largest WSAs in Utah. It is approximately 24 miles in length (northwest to southeast) and 12 miles wide (east to west).

NATURALNESS

Natural areas are areas where the evidences of man are substantially unnoticeable to the average visitor and where individual imprints of man exhibit no cumulative impact that is substantially noticeable. Imprints of man in the WSA include: a way 6 miles long from the abandoned airstrip on Grand Bench Neck into the Rock Creek drainage, several fences (approximately 7 miles), one developed spring, and three cabins, two on Fifty Mile Mountain and one in Rogers Canyon. These imprints combined involve about 100 acres or less than 0.1 percent of the WSA and are substantially unnoticeable. The remaining 145,043 acres have no imprints.

In the Fifty Mile Mountain WSA, the high quality of naturalness has not changed since the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b) decision. No additional imprints have occurred in the WSA under the BLM's *Interim Management Policy* (USDI, BLM, 1979c).

SOLITUDE

The WSA affords outstanding opportunities for solitude due to the size and topographic makeup of the WSA. The large size of this WSA enhances the outstanding opportunities for solitude present in the WSA. The configuration of the WSA neither enhances nor detracts from the outstanding opportunities present. The topography affords geographic isolation and screening, which create outstanding opportunities for solitude.

The Fifty Mile Mountain Plateau exhibits an opportunity for solitude due to geographic isolation. This opportunity is considered outstanding in quality because the plateau is totally isolated from the remainder of the WSA by an encircling cliffline that includes the Straight Cliffs; the cliffs of the Dry Rock Creek, Rock Creek, and Little Valley Creek basins; and the walls of Sunday, Monday, and Basin Canyons. Between the upper and middle trail access points (Basin Canyon to Blackburn Canyon), the cliffs of the Fifty Mile Bench enhance the isolating effect of the upper Straight Cliffs escarpment. Because this area is a true plateau, the top is a characteristically level tableland. However, topographic screening does exist where canyons such as Steer, Blackburn, Mudholes and Llewellyn, Sunday-Gates-Pocket Hollow, and West End-Monday Canyons cut into the top. Topographic screening is also present on the upper end of the plateau on the points between canyons such as West End Point where numerous rock outcroppings, ledges, and draws exist. Approximately 31,700 acres on the plateau top meet the standards for outstanding opportunities for solitude.

Outstanding opportunities for solitude also exist where the WSA is heavily dissected by canyons in the Rogers Canyon drainage, Little Valley Creek Basin, and Rock Creek Basin. In the Rogers Canyon drainage, the canyon dissection is extensive between Rogers Canyon and the Straight Cliffs. Here an extremely rugged network of canyons and benches is present where the numerous drainages such as Basin Canyon have cut canyons either to or through the upper portion of the Straight Cliffs escarpment. The remnant benches also possess outstanding opportunities for solitude because they are geographically isolated by the canyons and the Straight Cliffs. Many of these benches also possess topographic screening because of the extensive rock outcroppings on their surface. A similar area of outstanding opportunity for solitude occurs immediately north and west of the Rogers

Canyon-Left Hand Collet Canyon divide. Here several canyons tributary to Left Hand Collet Canyon have cut into the south wall of that canyon or into the Straight Cliffs. The canyons that afford an outstanding opportunity for solitude in the Little Valley Creek and Rock Creek Basins are limited in area. These canyons are present where the Navajo Sandstone is exposed in the three basins. They are typical of the narrow, winding slot type of canyons characteristic of the Navajo Sandstone.

Certain portions of the Straight Cliffs possess outstanding opportunities for solitude. In areas where the upper cliff face is alcoved and moist, the aspen and shrubby vegetation provide vegetative screening that enhances the topographic screening.

Sights and sounds of human activities are not present from most places within the WSA. From the top of the Straight Cliffs, vehicular activity on the Hole-in-the-Rock Road can be observed. From the western rim from Spencer Point to Mudholes Point, boating activity on Lake Powell and the plume from the Navajo Powerplant are visible. These activities are minor aspects of the panoramas obtainable from these vantage points. Views of these activities lend to the feeling of isolation and remoteness.

It would be easy for a visitor to find seclusion in the canyons of the Rogers Canyon drainage where excellent topographic screening exists. The user can also easily find seclusion on the Fifty Mile Mountain Plateau, because this portion of the WSA offers vegetative screening and is totally isolated from the remainder of the WSA.

In summary, approximately 69,000 acres of the WSA possess outstanding opportunities for solitude and 77,143 acres do not meet the criterion.

PRIMITIVE AND UNCONFINED RECREATION

The WSA offers outstanding opportunities for hiking, backpacking, horseback riding, photography, and sightseeing. Areas of outstanding hiking or horseback riding occur within the backpacking areas.

A major destination of backpackers and riders is the Fifty Mile Mountain Plateau from West End Point south to Fifty Mile, Navajo, and Spencer Points in Glen Canyon NRA. This is the elevated platform portion of the WSA, and it offers many backpacking objectives. The Fifty Mile Mountain is the highest large land mass in the lower Glen Canyon region, and it thus exhibits a landscape and climate unique to the region. The vegetation

FIFTY MILE MOUNTAIN WSA

is predominantly pinyon-juniper and includes aspen and isolated stands of ponderosa pine. Water sources are adequate for backpacking and horseback activities. The sightseeing and photography opportunities are outstanding along the Straight Cliffs rim and on the west rim and points where there are unobstructed views of the Escalante River canyons, Lake Powell, and the top of Navajo Mountain. Archaeological sites are numerous on the top of the Fifty Mile Mountain and in the bordering cliffline. Although the terrain is not difficult on top, archaeological sightseeing represents a challenging activity for the backpacker wishing to examine the archaeology in the cliffs.

The dissected region between the Straight Cliffs and Rogers Canyon offers outstanding opportunities for challenging backpacking trips. The backpacking activity is challenging here because the terrain is exceedingly difficult to traverse, being broken in places by canyons such as Basin Canyon. Also, water sources are scarce to non-existent.

The remaining area within the WSA that offers an outstanding opportunity for primitive recreation is the bench below the Fifty Mile Mountain between Steer Canyon and Navajo Point in the Glen Canyon NRA. Here there are sightseeing and photographic opportunities. The bench is the route of a potential road directed by Section 8 of the Glen Canyon Enabling Legislation. This route has been characterized by the NPS as offering "spectacular views" and the wilderness recommendation states that "... in fact, the view from Spencer and Navajo Points is probably as striking as any other in the conterminous United States" (USDI, NPS, 1979).

Overall, the primitive recreation opportunities on 67,000 acres of the WSA are outstanding. The remainder of the WSA (79,143 acres) has less than outstanding opportunities for recreation. The plateau portion of the WSA enhances the backpacking and sightseeing opportunities to a degree not often equaled in the lower Glen Canyon region.

SPECIAL FEATURES

The WSA is best known as a location for viewing the scenic features of the lower Glen Canyon region. These features include Lake Powell, Navajo Mountain-Rainbow Plateau, Glen Canyon, and the Escalante River canyonlands. The panoramas are available from the edges of the Fifty Mile Mountain proper, and Navajo, Spencer, and Fifty Mile Points in Glen Canyon NRA. These features of scenic value are external to the WSA.

The Rock Creek and Little Valley Basins are areas of scenic value that are part of the panoramas obtained from the west rim of the Fifty Mile Mountain. The characteristic scenery is that of colorful Navajo Sandstone basins rimmed by high cliffs. Sand dunes and slickrock are present in both basins. Woolsey Arch is located in the Rock Creek Basin. Approximately 11,800 acres in the Rock Creek and Little Valley Creek drainages possess scenic values.

Navajo Canyon in the extreme southwestern portion of the WSA also possesses scenic value. This canyon contains colorful yellow and grey badlands of Tropic Shale. Approximately 1,300 acres in Navajo Canyon exhibit scenic value.

Although the landscape of the Fifty Mile Mountain proper is unique in the sense that the plateau is the only island of green in the midst of red and yellow canyonlands and Lake Powell, it exhibits few intrinsic features of comparable scenic value. One area of scenic value is the Pleasant Grove, Steer Canyon, and Pinto Mare Canyon area where the presence of aspen in the canyons and rimrock contributes to an aesthetic landscape. The groves of aspen and rock outcroppings in the vicinity of the aspen patches are of similar scenic value. The Garden on the west rim is a small area of scenic value. Window Wind Arch above the middle trail is not an exceptionally scenic arch, but it has scenic value because of its location on the very edge of the Straight Cliffs. Approximately 480 acres of scenic values exist on the top of the Fifty Mile Mountain.

The remaining feature of special scenic value in the Fifty Mile Mountain WSA is the Straight Cliffs and the west rim from Spencer Point to Mudholes Point. This escarpment is a major landmark in south-central Utah. The Straight Cliffs are an important scenic feature viewed from the Hole-in-the-Rock road. Similarly, the west rim cliff is a scenic feature for boaters on the bays of Lake Powell. Approximately 5,700 acres of this cliffline in the WSA possess scenic value. The aggregate area of outstanding scenic values in the WSA is about 19,200 acres.

Unlike the landscape resource, the archaeological resource in the Fifty Mile Mountain WSA is considered a feature of significant historical, educational, and scientific value. Over 300 archaeological sites, including camp sites, pictographs and petroglyphs, rock shelters, and granaries, are present on the plateau and rims of the Fifty Mile Mountain south of Basin Canyon. In 1975, this 37,800-acre historic portion of the WSA was nominated to the National Register of His-

FIFTY MILE MOUNTAIN WSA

toric Places as the Fifty Mile Mountain Archaeological District. There is a high probability of additional significant archaeological sites outside of the nominated district.

In addition to its historical values, this archaeological resource is also of important scientific value. Fifty Mile Mountain archaeology was a major subject of investigation during the conduct of the Glen Canyon Archaeological Salvage Project. The plateau's strategic location as the prominent upland in immediate proximity to Glen Canyon makes it an important area from which occupational patterns and chronologies in the greater Glen Canyon region can be determined.

Because of its scientific value, the archaeological resource also possesses educational values. In the past, the scientific investigation of this resource has involved student participation and training from Utah institutions of higher education under the auspices of the University of Utah. Future investigations would undoubtedly involve student participation from universities in the region. Acres of educational value total 37,800.

Land Use Plans and Controls

The WSA lies within the BLM Escalante and Paria Planning Units which are being managed under the land use decisions of the Escalante and Paria MFPs (USDI, BLM, 1981a and 1981c). The present principal use within the WSA is livestock grazing. The WSA encloses 12,341 acres of State land within its boundaries. State lands are managed by the State Land Board for the purpose of generating revenues for the public school system. There are no BLM-granted right-of-ways within the WSA.

The *Kane County Master Plan* (Kane County Board of Commissioners, 1982) states, "Kane County supports the total concept of multiple use of lands. We reject exclusionary recreational forms that cannot be used by the average recreation visitor. Wilderness, as conceived by the Federal land agencies, is rejected because of the limited visitor utilization possibilities and rejection of the multiple use concept."

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers portions of this WSA. The master plan recognizes that the county possesses "... Some of the most spectacular scenery in the United States ... The County is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service unit

be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the 90 acres in the WSA, be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

Glen Canyon NRA forms 14 miles of the southern boundary of the unit. In the Glen Canyon Management Plan (USDI, NPS, 1979), a portion of the area adjacent to this unit making up 10.5 miles of the common boundary was recommended for wilderness designation. Section 8 of the Glen Canyon Enabling Legislation directed the NPS to study routes for a potential road from Glen Canyon City to Bullfrog Basin. One of four studied routes (USDI, NPS, 1979) crosses the Fifty Mile Mountain WSA. The NPS has not proposed that the road be built.

Socioeconomics

The Fifty Mile Mountain WSA is located in both Garfield (90 acres) and Kane (146,053 acres) Counties, Utah. Because of the location of the WSA relative to communities, Garfield County would be most influenced by wilderness designation.

DEMOGRAPHICS

Garfield is a rural county having an average population density of less than one person per square mile. This density is very low when compared to the Statewide average of 17 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Much of the population in Garfield County (3,673 persons) is concentrated in small communities rather than being evenly distributed throughout the area.

The community of Escalante lies along a major access route to the Fifty Mile Mountain WSA, Utah Highway 12. Escalante is one of the larger communities in the area having a 1980 population of 652 persons (USDC, Bureau of the Census, 1981). Escalante is the main gateway and service area for visitors to the Fifty Mile Mountain WSA.

EMPLOYMENT

The economy of Garfield County is dominated by the government sector and strong services sectors in terms of employment (USDC, Bureau of Economic Analysis, 1982). The three major sectors of the Garfield County economy in terms of 1980 employment are: government (20 percent), construction (18 percent), and services (13 percent). Table 7 presents employment and personal income for Garfield County.

FIFTY MILE MOUNTAIN WSA

TABLE 7
1980 Employment and Personal Income
Garfield County, Utah

Industrial Sector	Employment	Personal Income (\$1,000)
Total	2,143	24,792
Proprietors	349	2,637
Farm Proprietors	209	807
Nonfarm Proprietors	140	1,830
By Industry Source	—	—
Farm	27	949
Nonfarm	1,767	23,843
Private	1,332	19,049
Ag. Serv., For., Fish., and Other	(L)	79
Mining	208	4,222
Construction	379	5,536
Manufacturing	247	3,294
Non-durable Goods	(D)	(D)
Durable Goods	(D)	(D)
Transportation and Public Utilities	84	84
Wholesale Trade	(L)	96
Retail Trade	126	1,302
Finance, Insurance, and Real Estate	16	189
Services	270	2,786
Government and		
Government Enterprises	435	4,794
Federal, Civilian	140	1,656
Federal, Military	24	64
State and Local	271	3,074

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

It is difficult to estimate current employment and income in the small communities of the area due to the lack of information at the municipality level and restricted disclosure of the available data. It is assumed that most of the nongovernment employment and income in the area is based in the agriculture and services sectors. This is based upon the available county-wide data (Five County Association of Governments, 1982) and the low number of retail trade outlets, government offices, and major industries in the area. The services sector is expected to be a dominant sector because of the importance of services in the community of Escalante. The local school system dominates services employment in Escalante and is expected to do so in other communities of the region.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral exploration, mineral leasing, livestock production, woodland production, and recreation. Table 8 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 8
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$353,400
Coal Leases	0	\$25,200
Mineral Production	0	0
Mining Claim Assessment	Less than \$325,400	0
Livestock Grazing	\$62,660	\$4,386
Woodland Products	0	0
Recreational Use	Less than \$615	0
Total	Less than \$388,675	Up to \$382,986

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

The WSA has 3,254 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of the claims are current is assessment. The mineral exploration conducted in the WSA has generated temporary local employment and income.

Fourteen livestock operators have a total grazing privilege of 3,133 AUMs within the WSA. If all this forage were utilized, it would account for \$62,660 of livestock sales and \$15,665 of ranchers' returns to labor and investment.

The WSA's nonmotorized and motorized recreational use is low. Consequently, related local expenditures are low. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that Statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Fifty Mile Mountain WSA is estimated as about 150 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Garfield County.

The WSA generates Federal revenues from mineral leasing and livestock grazing (refer to Table 8).

Mineral leases in the WSA cover approximately 117,800 acres for oil and gas and 8,400 for coal. At up to \$3 an acre, lease rental fees for oil and gas and coal generate up to \$378,600 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which

are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 3,133 AUMS per year. Based on \$1.40 per AUM grazing fee, the WSA can potentially generate \$4,386 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this document.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and

economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and coal exploration and development. Even though the area would be open to resource use and development without control for wilderness protection, no major changes are projected to occur in the near future. This would be due to the WSA's rough terrain, access problems, and low resource potential for immediate development. However, there is a high potential for future coal development in the long term. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: coal, 2,165 acres; oil and gas, 160 acres; and uranium, 40 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) Also, 18,900 acres of land could be treated to improve wildlife habitat. The 18,900-acre figure is used for analysis purposes. The probability of such extensive land treatment is low.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If minerals are developed, air quality could be reduced up to the PSD Class II limitations; however, the likelihood of this occurring is low because all minerals would be developed by underground mining. Disturbance of 2,365 acres from mineral activity and 18,900 acres from land treatments would result in increases in fugitive dust emissions. The 18,900 acres of vegetation manipulation would cause temporary increases in fugitive dust during removal of the vegetation overstory.

GEOLOGY

No impacts to geology are expected from disturbances associated with uranium and oil and gas development because activities would probably not exceed 200 acres. Subsidence and fracturing of formations would occur with underground mining of coal on about 30 percent of the WSA; however, the extent is unknown.

SOILS

It is estimated that up to 2,365 acres of soil could

be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 2,365 acres would increase from 2,075 cubic yards/year to 6,386 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 3,311 cubic yards (1.6 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible. The proposed 18,900 acres of land treatment for wildlife habitat could cause a temporary increase in soil loss. However, after establishment of the seeding there could be an overall reduction in soil loss on 13 percent of the WSA.

VEGETATION

The anticipated maximum of 2,365 acres disturbed from mineral activity would not significantly impact the WSA's sparse vegetation because reclamation would be required. The proposed land treatment for wildlife would open up areas of dense pinyon-juniper stands, changing areas from pinyon-juniper cover to grass and browse.

Depending on the location of disturbance, there could be conflicts with protection of beard-tongue (*Penstemon atwoodii*), a Fish and Wildlife Service (FWS) candidate species under review for threatened or endangered status. Before authorizing surface-disturbing activities the BLM would conduct site-specific clearances of the potentially disturbed areas. If this species could be affected, the BLM would initiate informal consultation with the FWS as required by the Endangered Species Act and BLM policy. The BLM would request a biological opinion when appropriate (refer to Appendix 4). Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of threatened, endangered, or sensitive plant species would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in TDS is expected to occur from the 3,311 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of

existing water sources could occur as allowed in the current MFPs for the Escalante and Paria Planning Units.

The chaining and reseeded of 18,900 acres of pinyon-juniper could cause a temporary (2- to 3-year) increase in TDS. However, after the new seedings are established, water quality could be expected to improve.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and would not significantly impact ground water. The quality and flow of groundwater in the WSA could be reduced by underground mining on 30 percent of the WSA. The impacts of coal mining on ground water would be partially mitigated by constraints on development required by State law.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) and up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1, 3, and 4 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected under this alternative.

Coal

An estimated coal resource of 147 million tons of minable coal (73 million tons recoverable) on 43,300 acres is found in the WSA. Approximately 8,400 acres of the coal are leased and the remainder of the minable area could be leased in the future. This resource could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that up to 2,165 acres of surface disturbance would occur from coal development. The likelihood for production of coal is thought to be low in the near future within the WSA because of remoteness from markets, high production costs, and competition from other coal fields and other portions of the Kaiparowits Coal Field. However, over the long term there is a high potential for coal development, and the potential for future development would not be affected by this alternative.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposit of up to 1,709 tons of uranium including 700 tons localized in Cat Pasture and 509 tons in the Fifty Mile Point areas could be developed. An unknown amount of titanium may also be found within the WSA. Approximately 40 acres could be disturbed due to exploration and development of these locatable mineral resources. However, the likelihood of development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the availability of water through the construction of two spring developments and 18,900 acres of land treatment for wildlife. These developments would improve the quality of wildlife habitat and possibly increase their numbers. However, disturbance of an estimated 2,365 acres (1.6 percent of the WSA) through mineral and energy development and exploration would disrupt wildlife. Deer, mountain lion, and mobile nongame animals would be dispersed from the disturbed areas for the lifetime of these activities. Desert bighorn sheep would avoid the area. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. The peregrine falcon and golden eagle, two endangered species, would avoid the disturbed area. The three sensitive species, Lewis woodpecker and western and mountain bluebirds, would also avoid the disturbed areas. Overall, there would probably be little effect on wildlife because only a small portion (1.6 percent) of the WSA would be disturbed.

FOREST RESOURCES

Since there are no commercial timber stands in the WSA and only scattered pinyon and juniper, none of which are utilized (except by occasional campers or hikers), no harvest or loss of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Paria and Escalante MFPs. The 3,133 AUMs currently allocated in the WSA are controlled by 14 livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA, few, if any, changes in

livestock management techniques are expected. The proposed 7.5 miles of fence and two spring developments could be developed and would result in improved livestock distribution.

VISUAL RESOURCES

Under this alternative, visual quality in the WSA would be protected by limitations placed on potential surface-disturbing activities (i.e., ORVs would be restricted to existing roads and trails on 39,343 acres, 42,343 acres would be closed to oil and gas leasing, and the entire area would be managed under VRM Class II objectives requiring that activities not be apparent).

However, under this alternative, 18,900 acres of vegetation manipulation would occur and 2,365 acres of mineral-related exploration and development are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in VRM Class II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

The numerous archaeological sites in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 2,365 acres by mineral exploration and development and 18,900 acres by land treatment under this alternative could affect National Register sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed areas. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population and new access resulting from mineral development. Because of high densities, new access could result in significant loss of artifacts and scientific information.

RECREATION

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative mineral-related exploration and development are possible on

2,365 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for nonprimitive recreation.

The future increase in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 150 current visitor days per year to 224 at the end of 20 years. Assuming that the 2-percent increase would be uniform among all recreation uses in the WSA, primitive recreational use would increase from the estimated current use of 135 visitor days per year to about 200 per year over the next 20 years. Likewise, recreational activities utilizing motor vehicles would increase from 15 visitor days per year to 24. Overall, recreation use could increase significantly if access were developed into the area.

Six miles of way would be left open to ORV use, although they are not presently used for ORV travel.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Escalante and Paria MFPs. Under this alternative, wilderness values in the WSA would be protected by limitations placed on potential surface-disturbing activities (i.e., ORVs would be restricted to existing roads and trails on 39,343 acres, 42,343 acres would be closed to oil and gas leasing, and the entire area would be managed under VRM Class II objectives requiring that activities not be apparent).

However, under this alternative, 18,900 acres of vegetation manipulation would occur and 2,365 acres of mineral exploration and development are possible. The related surface disturbance would result in a significant loss of naturalness and outstanding opportunities for solitude and primitive, unconfined recreation throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for future coal development and related disturbance is high in the long term in this WSA.

LAND USE PLANS AND CONTROLS

This alternative would generally be consistent with *Kane and Garfield County Master Plans* which recommend multiple use. However, closure of 42,343 acres to oil and gas leasing under current BLM plans is not totally consistent with the counties multiple use concept. It would not complement the NPS proposal of wilderness designation for the adjacent lands in Glen Canyon NRA, because BLM lands within 10.5 miles of common boundary of the WSA would not be recommended as wilderness. This alternative is based on implementation of the current BLM Escalante and Paria MFPs and is, therefore, in conformance with them. The No Action Alternative would be consistent with State of Utah plans and policies which emphasize economic return.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain essentially as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the coal, uranium, and oil and gas in the WSA were developed it would lead to a significant increase in employment and income for Garfield and Kane Counties. The probability of economic development of coal within the WSA is high in the long term (refer to the Mineral and Energy Resources section for a description of minerals and development potentials).

There would be no livestock-related economic losses because the existing grazing use (3,133 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$62,660 annually in livestock sales and \$15,665 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only 74 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Mining activities could improve access into the area and, consequently, increase recreation visitor days.

There would be a loss of up to \$49,650 per year due to phasing out of oil and gas leases on the 16,550 acres in Category 4 (closed to leasing). However, leasing of coal and oil on presently unleased areas would increase annual Federal leasing revenues by up to \$112,350. Overall, Federal revenues could increase by up to \$62,700 annually.

Collection of livestock grazing fees (\$4,386 per year) would continue.

The potential for economic benefits related to development of commercial mineral deposits in the WSA would remain. However, immediate prospects are marginal, and there is limited possibility that resources would be affected. Overall, the local economic impact would be considered insignificant for the short term. Long-term impacts could be substantial if the coal resource and associated transportation systems were developed.

All Wilderness Alternative (146,143 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 146,143-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 6 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The 18,900 acres of vegetation manipulation would not be allowed. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities and that coal leases would expire before diligent development occurred. Oil and gas leases and coal leases would not be renewed and future leasing of oil and gas or coal would not be allowed. (Appendix 10 lists surface disturbance assumptions and estimates for the WSA.)

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (40 vs. 2,365 acres associated with minerals and 18,900 for vegetation manipulation),

the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could not occur unless they could be developed in a manner nonimpairing to wilderness values. The proposed two spring developments might not be developed if incompatible with wilderness values.

Mineral exploration and development for locatable minerals is generally confined at or near the surface or with widely spaced wells and would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 117,800 acres are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA. Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be re-issued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place and less than 60 billion cubic feet of natural gas with 3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Coal

The northwest side of the WSA has potential for coal development. Approximately 8,400 acres of the WSA are presently leased, containing 102 million tons of minable coal. These leases can be developed even if the area is designated wilderness and the leases can be renewed if diligent development occurs. It is assumed in this alternative that diligent development will not occur before the leases expire because of poor accessi-

bility, lack of abundant water, high cost of underground mining, and competition from other areas.

Therefore, it is concluded that the potential for development of 43,300 acres of coal resources (73 million tons of recoverable coal) would be foregone. The potential for this resource is high within the WSA; however, the likelihood for development is thought to be low in the near future. In the long term there is a high potential for coal development.

Locatable Minerals

Approximately 65,000 acres are under mining claim within the WSA, principally for uranium. Up to 1,709 tons of uranium in the entire area (up to 700 tons localized in Cat Pasture and 509 tons in Fifty Mile Point possible resource areas) that are recoverable could occur within the WSA. There is also an unknown amount of titanium within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 40 acres could be disturbed due to exploration and development of the locatable mineral resources. If the potentially recoverable minerals are not within mining claims filed before designation, the potential for recovery of the titanium and uranium oxide would be foregone.

Because production of these metals is not currently occurring and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in any significant loss of recoverable uranium and titanium resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However, water is a limiting factor for wildlife in this WSA. If future water improvements and the 18,900 acres of land treatment were not completed, potential habitat for deer and nongame species would be reduced. Bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water.

In addition, disturbance due to exploration of locatable mineral resources could disrupt wildlife populations and result in these species leaving the area.

The occasional presence of the peregrine falcon, Lewis woodpecker, western and mountain bluebirds, and golden eagle would remain the same in

much of the WSA, except in those 40 acres of mineral disturbance where these species would leave the disturbed area.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Escalante and Paria MFPs. The 3,133 AUMs currently allocated in the WSA are controlled by 14 livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed, if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. In the case of the 7.5 miles of fence and two spring developments, which of these would be allowed, if any, is unknown since each would be considered on a case-by-case basis.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative the disturbance from 18,900 acres of planned vegetation manipulation would not occur and the possible mineral-related surface disturbance would be reduced from 2,365 acres to 40 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims could not be denied (worst-case analysis), VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management including restrictions on access would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 150 visitor days a year) the WSA has outstanding primitive recreational values. If designated those high quality recreational opportunities would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan must control destructive increases in future recreation use, and the quality of the primitive recreation experience would not be negatively affected by the increased use. The 6 miles of ways in the WSA would be closed to ORV use. The 15 visitor days of ORV play activity and/or vehicular hunting and sightseeing in the WSA that could occur without designation would be eliminated from the WSA. Because there are other suitable ORV play areas in the vicinity of the WSA, ORV use would probably not experience an overall decline in the vicinity of the WSA.

Mineral-related surface disturbance on up to 40 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

It is concluded that this alternative could benefit primitive recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values. This alternative would reduce the potential for motorized recreational use from increased access.

WILDERNESS VALUES

Designation and management of all 146,143 acres

as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive recreation. Vegetation manipulation on 18,900 acres would not be allowed. Solitude would be preserved on approximately 69,000 acres that meet and 77,143 acres that do not meet the standards for outstanding opportunities for solitude. Naturalness would be preserved on all 146,143 acres and primitive and unconfined recreation would be preserved on 67,000 acres that meet and 79,143 acres that do not meet the standards for outstanding opportunities. The special features in this WSA (i.e., scenic, historic, scientific, and educational values) would also be protected and preserved.

No development of leases is foreseen under this alternative. Anticipated mineral-related surface disturbance would, therefore, be reduced from 2,365 acres to 40 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development. Therefore, although disturbance would eliminate solitude and naturalness in the vicinity of the activity, it is less likely than the No Action Alternative to result in a significant loss of solitude and naturalness.

Outstanding opportunities for five recreational activities (backpacking, hiking, horseback riding, photography, and sightseeing) would be preserved. Although recreational use could increase (refer to Recreation section above), use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreational values would be expected.

Designation of this WSA as wilderness would benefit the values and uses of the contiguous NPS wilderness proposal. These areas share a common watershed, canyon system, recreation travel trails (hiking and horseback riding), and archaeological values.

Thus, it is concluded that wilderness designation and management of all 146,143 acres of the Fifty Mile Mountain WSA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude (outstanding on 69,000 acres) and primitive recreation (outstanding on 67,000 acres) except in localized areas affected by the surface disturbance related to mineral exploration. In the area as a whole, however, no significant loss of wilderness values would be expected.

LAND USE PLANS AND CONTROLS

This alternative would complement the NPS wilderness proposal for wilderness designation

along 10.5 miles of the boundary of the adjacent Glen Canyon NRA. About 3.5 miles of the boundary of the BLM wilderness area would be adjacent to nondesignated portions of the NRA. The existing BLM Paria and Escalante MFPs do not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to these plans.

The *Kane County Master Plan* recommends multiple use of all public lands in the county and Garfield County recommends over 111,000 acres be designated wilderness, but this area was not included. They recommend this area be managed for multiple use. Wilderness management is not considered by the counties to be multiple-use management, and this alternative would conflict with the counties' plans. However, this alternative does not totally conflict with the multiple-use concept since many existing resource uses would continue, although under more restrictive conditions. If the 12,341 acres of State land within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation, there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 8) as well as loss of significant potential increases in income and Federal revenues that could occur with coal development under the No Action Alternative.

The potential for oil, gas, uranium, and titanium development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). However, valid existing oil and gas and coal leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Because the potential for coal development is high, it is estimated that potential mineral-related local income would be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$62,660 of livestock sales and \$15,665 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide). Motorized recreational use of the WSA is minimal. The decrease in related local expenditures would also be minimal.

The loss of 109,650 acres of existing oil, gas, and coal leases that could continue with No Action would cause an eventual loss of up to \$328,950 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$112,350 annually in Federal revenues from the 34,900 acres that could be leased for coal and 2,550 acres that could be leased for oil and gas without designation.

Partial Wilderness Alternative (92,441 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 92,441-acre area designated as wilderness and the 53,702-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, some of the existing mining claims would eventually be explored and developed, causing an estimated 25 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities. There are no existing coal leases in the designated area. Oil and gas leases would not be renewed and future leasing of oil and gas or coal would not be allowed.

It is assumed that, within the nondesignated area, 1,500 acres would be disturbed sometime in the future due to uranium, coal, and oil and gas exploration and development. Overall, 1,525 acres of mineral-related surface disturbance would occur within the WSA, 840 acres less than under the No Action Alternative and 1,485 acres more than with the All Wilderness Alternative. (Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.) In the nondesignated area, 7,900 acres could also be disturbed by a land treatment project for wildlife. The 7,900-acre figure is used for analysis purposes. The probability of such extensive land treatment is low.

The analysis of the No Action Alternative, based on 2,365 acres of surface disturbance from minerals, shows that full development of potential resources with associated surface disturbance would affect air quality, geology, soils, vegetation, water, forest, and cultural resources. These resources would be affected to a lesser degree by this Partial Wilderness Alternative which assumes 1,525 acres of surface disturbance. The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 67,300 acres of oil and gas leases in the area that would be designated wilderness. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 2 million barrels of oil and 11 billion cubic feet of natural gas could be foregone. This would allow recovery of 1 million more barrels of oil and 7 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Coal

Approximately 15,000 acres of minable coal falls within the portion of the WSA that would be designated wilderness. None of this coal is presently leased. It is assumed that none of this coal would be leased before wilderness designation.

The potential for development of 15,000 acres of coal with an estimated 19 million tons of minable coal could be foregone as under the All Wilder-

ness Alternative. However, in the nondesignated area there are 28,300 acres of coal resource containing 128 million tons of minable coal. Approximately 8,400 acres of this coal is leased, containing 102 million tons of minable coal. The coal in this area could be developed without direct hindrance from wilderness designation.

Locatable Minerals

Approximately 2,243 acres of mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable uranium or titanium in the WSA falls within the area that would be designated as wilderness under this alternative. Assuming that the locatable minerals are evenly distributed in the WSA and its possible resource areas and that the mineral deposits are not included in mining claims filed before designation, the potential for recovery of uranium would be foregone as follows: 315 tons in the f2/c3 area, 500 tons in Cat Pasture, and 509 tons in Fifty Mile Point possible resource areas. This would allow for recovery of 385 more tons of uranium oxide than the All Wilderness Alternative. There is not enough information to make projections for the titanium resource.

Because these metals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not prevent recovery of significant amounts of uranium and titanium.

WILDLIFE

The impacts on wildlife in the designated area would be the same as the All Wilderness Alternative. In the nondesignated area approximately 7,900 acres of the proposed land treatment could occur and would improve wildlife habitat. Other impacts in the nondesignated area would be the same as the No Action Alternative.

LIVESTOCK

The effect of designation of 92,441 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 3,133 AUMs allocated,

1,647 AUMs would be within the designated portion of the WSA and 1,486 AUMs within the non-designated portion. Development of future roads or other livestock management facilities for use with 1,647 AUMs in the designated portion could be restricted to preserve wilderness values. Because only 7.5 miles of fence and two spring developments have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected.

VISUAL RESOURCES

Because mineral-related surface disturbance in the WSA would be 1,525 acres under this alternative as opposed to 2,365 acres under No Action and 40 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and more than under the All Wilderness Alternative. In the portion recommended for designation, 25 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 1,500 acres in the nondesignated portion of the WSA would be disturbed and would not meet VRM Class II objectives. Disturbance of a total of 1,525 acres within the WSA would result in localized long-term impairment of visual values and could significantly affect visual resources in the WSA as a whole. The significance of the visual impact would depend on the scattered nature of the disturbance. The 7,900 acres of land treatment would temporarily result in a loss of visual quality.

RECREATION

Impacts on recreational values and opportunities for the 92,441-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the lack of such activity in the area. None of the 6 miles of ways are within the designated portion of the WSA.

In the area that would not be designated (53,702 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 92,441 acres that would be designated wilderness. Size, naturalness (all 92,441 acres affected are natural), outstanding opportunities for solitude (64,774 acres that meet and 25,977 acres that

do not meet the standards), and special features would be preserved. Although recreational use could increase (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 25 acres in the designated area. Additionally, sights, sounds, and emissions of activities within and adjacent to the 53,702-acre area that would not be designated could result in loss of solitude and primitive recreational values within the designated portion.

In the 53,702-acre area that would not be designated, there would be 1,500 acres of disturbance from mineral and energy exploration and development activities and 7,900 acres of vegetation manipulation. Those activities would degrade wilderness values (naturalness, special features and opportunities for solitude and primitive recreation) from the commencement of activities through rehabilitation. Thus, long-term impairment of wilderness values in the portion that would not be designated could occur. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative. If the 7,040 acres of State land within the designated area are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Partial designation of this WSA is not expected to result in any changes in existing patterns and trends of population, employment, and local income distributions. Coal development could take place on existing and future leases in the nondesignated portion. This would lead to increased income and revenue in Garfield and Kane Counties. The 3,133 AUMs would remain available to cattle in the five allotments. Revenue, sales, and returns to ranchers would not change. Approximately \$152,250 per year in Federal oil and gas leasing revenue that would continue under the No Action Alternative would be lost as leases expire. This is \$208,800 less annual loss than with the All Wilderness Alternative. Existing coal lease revenues would not change. There

would be a potential loss of \$45,000 annually in Federal revenue from the 15,000 acres that could be leased for coal development without designation and this revenue would not be transferred to State programs. Overall, the local economic impacts from this alternative would be similar to the impacts of the All Wilderness Alternative except that coal could be developed and more area could be leased for oil and gas.

Partial Wilderness Alternative (51,540 Acres)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 51,540-acre area designated as wilderness and the 94,603-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, some of the existing mining claims would eventually be explored and developed, causing an estimated 14 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and that unleased coal areas would not be leased before or after designation. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed.

It is assumed that, within the nondesignated area, 2,230 acres would be disturbed sometime in the future due to mineral and oil and gas and coal exploration and development. Overall, 2,244 acres of mineral-related surface disturbance would occur within the WSA; 135 acres less than under the No Action Alternative, 2,190 acres more than with the All Wilderness Alternative, and 719 acres more than the Partial Wilderness Alternative of designating 92,441 acres. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA. The 18,900 acres of vegetation manipulation would be in the nondesignated area. The impacts due to this project would be the same as those described in the No Action Alternative.

The analysis of the No Action Alternative, based on 2,385 acres of surface disturbance and development of the WSA's coal, shows that full development of potential resources with associated surface disturbance would affect air quality, geology, soils, vegetation, water, and cultural

resources. These resources would be affected similarly by this Partial Wilderness Alternative which is based on 2,244 acres of surface disturbance.

Restrictions on management and development methods within the designated portion of the WSA would result in essentially the same impacts on development of water sources, mineral and energy resources, wildlife, and land use plans as described for the All Wilderness Alternative. The impacts of designating 51,540 acres of wilderness in the WSA would generally be of the same nature as those resulting from designation of 92,441 acres as wilderness because all the existing coal leases and the highest potential for development are found in the nondesignated area similar to the 92,441-acre Partial Wilderness Alternative. The magnitude would be slightly larger because of an additional 719 acres of surface disturbance related to potential coal and oil and gas exploration and development.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 45,980 acres of oil and gas leases in this area. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil and 18 billion cubic feet of natural gas are estimated to be recoverable. It is assumed that the loss of potential resource recovery would be in direct proportion to the size of the area designated. Using this assumption, exploration and development of a potential resource of up to 1 million barrels of oil and 6 billion cubic feet of natural gas could be foregone. This would allow recovery of 2 million more barrels of oil and 12 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

FIFTY MILE MOUNTAIN WSA

Coal

Approximately 1,300 acres of minable coal (1 million tons) would be within the portion of the WSA that would be designated wilderness. This acreage is presently not leased.

The potential for development of coal with an estimated 146 million tons of minable coal (72.5 million tons recoverable) would be maintained as it would under the No Action Alternative. The potential development of this resource is low in the near future because of mining costs, markets, access, and competition from other areas. However, potential for development is high in the long term.

Locatable Minerals

Approximately 16,800 acres of mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable uranium or titanium in the WSA is within the area that would be designated as wilderness under this alternative. All of Fifty Mile Point possible resource area (509 tons uranium oxide) and 12 percent of Cat Pasture possible resource area (12 percent of 700 tons of uranium oxide) are within the designated portion of the WSA. Assuming that the locatable minerals are evenly distributed in the WSA and that the mineral deposits are not included in mining claims filed before designation, the potential for recovery of up to 770 tons of uranium oxide and an unknown amount of titanium would be foregone. This would allow for recovery of 939 more tons of uranium oxide than the All Wilderness Alternative and 555 more tons than the 92,441-acre alternative.

Because these metals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur, therefore, this alternative would not prevent recovery of significant amounts of uranium and titanium.

LIVESTOCK

The effects of designation of 51,540 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wil-

derness Alternative. Of the 3,133 AUMs allocated, 920 would be within the designated portion of the WSA and 2,213 within the nondesignated portion. Development of future roads or other livestock management facilities for use with the 920 AUMs in the designated portion could be restricted to preserve wilderness values. Because only two spring developments and 7.5 miles of fence have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected.

VISUAL RESOURCES

Because total surface disturbance in the WSA would be 21,144 acres under this alternative, as opposed to 21,265 acres under the No Action Alternative and 40 acres under the All Wilderness Alternative, the impact on visual resources would be slightly less than under the No Action and significantly more than under the All Wilderness. In the portion recommended for designation, 14 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. The additional 21,130 acres in the nondesignated portion of the WSA would be disturbed and would not meet VRM Class II objectives. Disturbance of a total of 21,144 acres within the WSA would result in localized long-term impairment of visual values and could significantly affect visual resources in the WSA as a whole.

RECREATION

Impacts on recreational values and opportunities for the 51,540-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on ORV recreational use would be expected due to the lack of such activity in the area. No ways would be closed to ORV use.

In the area that would not be designated (94,603 acres), little change in recreational use is expected.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the area that would be designated wilderness. Designation and management of 51,540 acres of the WSA as wilderness would ensure the preservation of the wilderness values of size, naturalness (all 51,540 acres appear natural), solitude (including 38,200 acres that meet the standard and 13,340 acres that do not meet the standard), and out-

FIFTY MILE MOUNTAIN WSA

standing opportunities for primitive and unconfined recreation (including 43,000 acres that meet the standard and 8,540 acres that do not meet the standard). Although recreational use could increase (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the area would be low. Therefore, no significant effect on solitude and primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 14 acres in the designated portion of the WSA. Additionally, sights, sounds, and emissions of activities within and adjacent to the 94,603-acre area that would not be designated could result in loss of solitude and primitive recreational values in the designated portion.

In the 94,603-acre area that would not be designated, there would be 2,230 acres of disturbance from mineral and energy exploration and development activities and 18,900 acres of chaining and seeding. Those activities would degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation) from the commencement of activities through rehabilitation. Thus, long-term impairment of wilderness values in the portion that would not be designated would be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative, with the exception of its relationship to Glen Canyon NRA. The area

immediately adjacent to this WSA along 10.5 miles of the 12 mile common boundary has been proposed as wilderness in Glen Canyon NRA. Only 1.5 miles of the designated portion would adjoin nondesignated portions of the NRA as compared to 3.5 miles with the All Wilderness and Partial Designation (92,441-acre) Alternative. If the 1,920 acres of State land within the designated area are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Partial designation of this WSA is not expected to result in any changes in existing patterns or trends in population, employment, and local income distributions. The 3,133 AUMs would remain available to cattle in the five allotments. The revenues, sales, and returns to ranchers would not change. Approximately \$36,456 per year in Federal oil and gas leasing revenue that would continue under the No Action Alternative would be lost as leases would be phased out. However, 2,550 unleased acres would be in the nondesignated area and could be leased for oil and gas at up to \$7,650 per year. There would also be a potential loss of \$3,900 annually in Federal revenues from the 1,300 acres of minable coal in the designated portion that could be leased for coal development without designation. Revenues from existing coal leases would continue and 33,600 additional acres could be leased for coal to bring up to \$100,800 per year in Federal revenues plus royalties and bonus bids. Coal development could occur with this alternative and would have a significant effect on the economies of Kane and Garfield Counties.

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FIFTY MILE MOUNTAIN WSA

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Red Butte
WSA



RED BUTTE WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative (Proposed Action)	4
Summary of Environmental Consequences	6
AFFECTED ENVIRONMENT	7
Air Quality	7
Geology	7
Soils	7
Vegetation	9
Water Resources	9
Mineral and Energy Resources	9
Wildlife	10
Forest Resources	11
Livestock and Wild Horses/Burros	11
Visual Resources	11
Cultural Resources	11
Recreation	11
Wilderness Values	11
Land Use Plans and Controls	12
Socioeconomics	12
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	14
Analysis Assumptions and Guidelines for All Alternatives	14
No Action Alternative	14
All Wilderness Alternative (Proposed Action).....	16
BIBLIOGRAPHY	21

RED BUTTE WSA

(UT-040-147)

INTRODUCTION

General Description of the Area

The Red Butte Wilderness Study Area (WSA) is located in Washington County. It lies along the boundary of Zion National Park and a National Park Service (NPS) administratively endorsed wilderness proposal encompassing 120,620 acres. The WSA is approximately 15 road miles from Virgin, Utah and is administered by the BLM, Cedar City District. The unit contains 804 acres and adjoins the Park for approximately 1 mile along its north side.

The area's topography is dominated by a red butte on a sandstone mountain in the southeast part of the unit. Elevations vary from 7,400 feet above sea level to 5,500 feet.

Average annual precipitation is approximately 15 inches. Approximately half of the precipitation falls from December through March, in the form of snow. Intense thunderstorms from the southwest are common during the summer months.

Temperatures vary greatly with aspect and altitude, but are generally mild. July and January are the warmest and coldest months, respectively. July temperatures range from extremes of 0 degrees Fahrenheit (F) to 105 degrees F. There are no private or State lands located within the unit.

This WSA was dropped from wilderness study status by the U.S. Secretary of the Interior on December 30, 1982 due to its small size. As result of a decision of the Eastern District Court of California (Sierra Club vs. Watt, No. Civil 5-83-035 LRK, dated April 18, 1985) it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA); and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres, if they are adjacent to land with wilderness potential administered by other Federal agencies.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I. Public opportunity to review and comment on an initial draft analysis of this area occurred in August 1982. Because of the 1982 decision of the U.S. Secretary of the Interior, the area was not among those listed in the brochure used for the 1984 EIS scoping meetings

(USDI, BLM, 1984); however, the specific issues and concerns expressed earlier apply and are as follows.

1. *Comment:* Based on size, this area does not qualify for further consideration as a wilderness area. All other normal considerations mandated as a part of the EIS must be adequately treated to the satisfaction of the Commission.

Response: This WSA is adjacent to a proposed wilderness area in Zion National Park. BLM has authority under Section 202 of FLPMA to study units of less than 5,000 acres.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal land use plans?

Response: Consistency with land use plans is discussed in the Land Use Plans and Controls sections of this document. Management following wilderness designation of this unit would be consistent with management of the proposed wilderness area in Zion National Park.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Red Butte WSA is only 804 acres. A partial alternative was not considered because it would not be viable nor would it resolve any resource conflicts.

Transfer of several WSAs, including the Red Butte WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, because BLM could continue to manage the WSA without wilderness designation or



could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness and because the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM "Wilderness Study Policy" (USDI, BLM, 1982b) requires the BLM to determine in its Wilderness Study Report (1) whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and, (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency administering the contiguous wilderness area.

BLM has determined that the Red Butte WSA would not be a viable independent wilderness if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions (i.e., relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items). Environmental differences, if any, would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation, and therefore are not relevant to the analyses of the impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (804 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

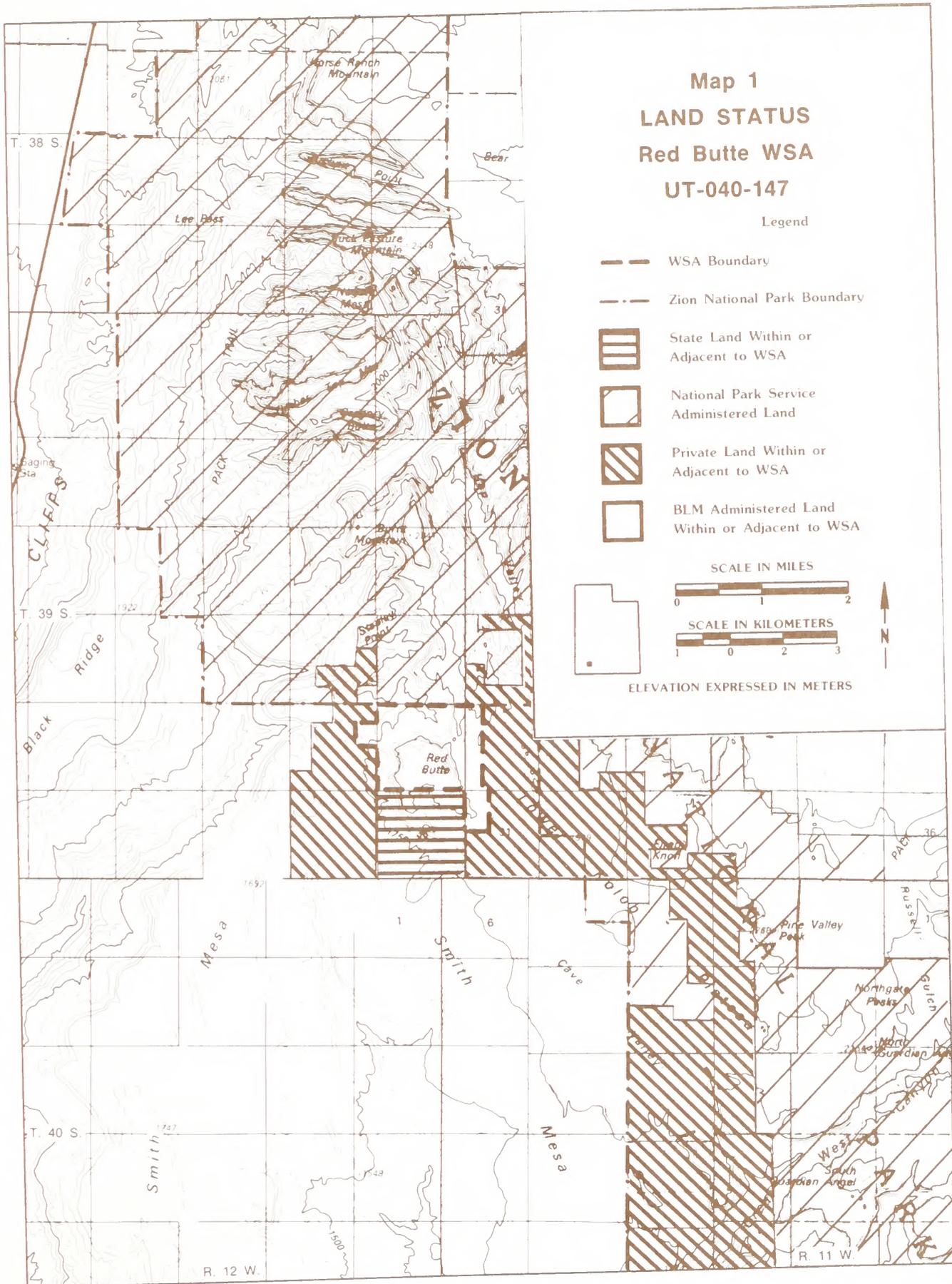
NO ACTION ALTERNATIVE

Under this alternative, none of the 804-acre Red Butte WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Virgin River Management Framework Plan (MFP) (USDI, BLM, 1979b). No State lands lie within the WSA (refer to Map 1); however, a single State section is adjacent to the WSA.

The following are specific actions that would take place under this alternative:

- All 804 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing and future oil and gas leases could be developed under standard stipulations (Category 1) on all 804 acres. There are presently two leases (788 acres) in the WSA. The remainder of the area is not leased.
- The present domestic livestock grazing use of 30 Animal Unit Months (AUMs) would continue as authorized in the Virgin River Planning Unit MFP and *Hot Desert Grazing Management EIS* (USDI, BLM, 1978). There are no existing range developments in the WSA. New rangeland developments (none are planned) could be implemented without wilderness considerations.
- Developments for wildlife, water resources, etc. (none are planned) would be allowed without concern for wilderness values if in conformance with the current BLM land use plan.
- The WSA would be open to vehicular use and new access routes would be allowed.
- The entire 804-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (804 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.

RED BUTTE WSA



RED BUTTE WSA

- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 804 acres of the Red Butte WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA lies adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it would be managed in part with the NPS-proposed wilderness. As a result, the Red Butte WSA could be retained by BLM or transferred to the NPS along with nine other small WSAs (refer to Map 3) who would then assume management responsibilities. For the purposes of this analysis, it is assumed that BLM would retain management of the Red Butte WSA, and would manage it in part with the contiguous NPS-proposed wilderness in accordance with the BLM "Wilderness Management Policy" to preserve its wilderness character. No State lands are located in the WSA. One State section lies adjacent to the WSA; however, it would likely not be exchanged following wilderness designation (refer to Map 1). The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 804 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims have been located in the WSA. Existing oil and gas leases involving approximately 788 acres would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown.
- Present domestic livestock grazing would be allowed to continue as authorized in the Virgin River MFP and *Hot Desert Grazing*

Management EIS. The 30 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness resource protection and management. There are currently no rangeland developments in the WSA, and none are planned.

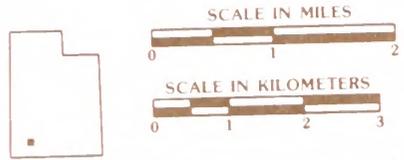
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Red Butte WSA, and none are currently planned.
- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 804-acre area would be closed to off-road vehicle (ORV) use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. There are no roads along the boundary of the WSA.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 804-acre wilderness.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in in-

RED BUTTE WSA

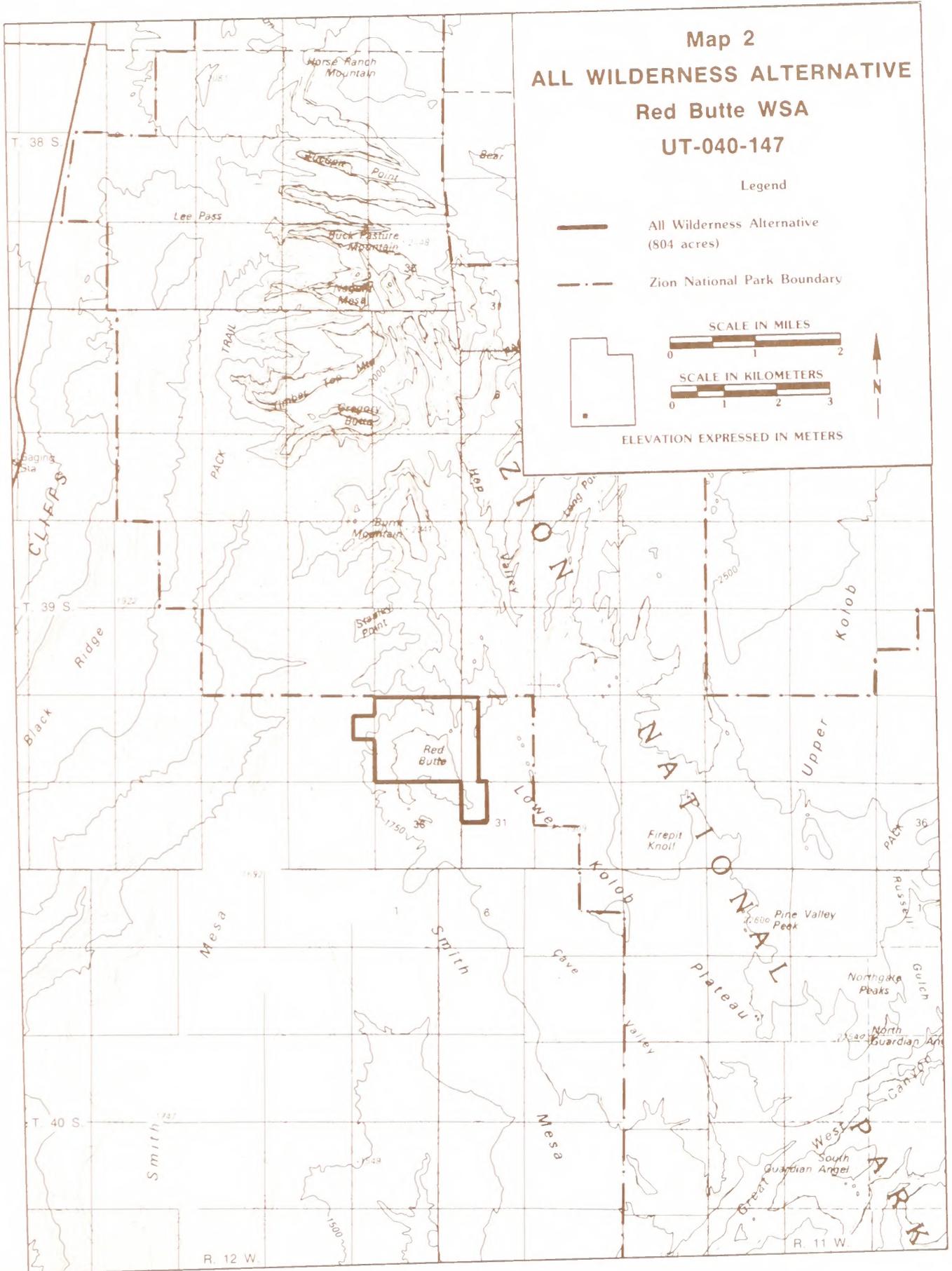
Map 2 ALL WILDERNESS ALTERNATIVE Red Butte WSA UT-040-147

Legend

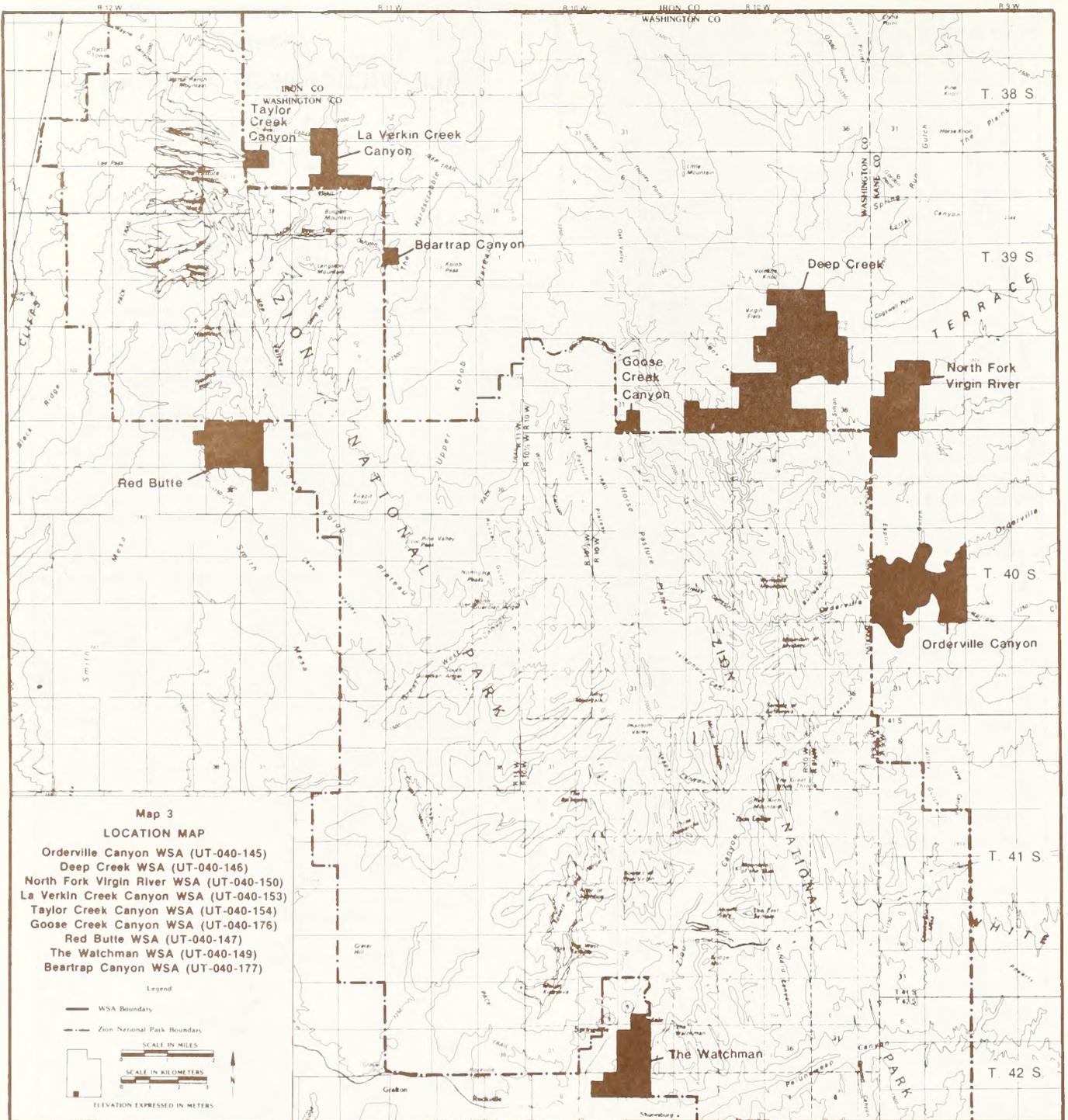
-  All Wilderness Alternative (804 acres)
-  Zion National Park Boundary



ELEVATION EXPRESSED IN METERS



RED BUTTE WSA



stances that threaten human life, property, or high-value resources on adjacent non-wilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences that would result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

Air quality data for the WSA were obtained from

the automated visibility measuring station at Lava Point in Zion National Park. This station scans across the area of the WSA, focusing on the Kaibab Plateau in Arizona. The preliminary figures from this relatively new system give an average visibility of 155 miles. This indicates extremely clean air in the area. The area is presently classified as Class II air under the Prevention of Significant Deterioration (PSD) regulations. This means that air quality deterioration that accompanies moderate well-controlled growth would not be considered significant. Zion National Park contiguous with the WSA has a PSD Class I designation under existing regulations.

Geology

The Red Butte WSA lies within the Grand Staircase Section of the Colorado Plateau Physiographic Province. The WSA consists essentially of Red Butte and a portion of the mesa on which it is located.

The lowest elevation is approximately 5,400 feet above sea level and occurs at Smith Creek in the northwestern part of the WSA. The highest elevation is approximately 7,400 feet above sea level on top of Red Butte.

Smith Creek is the main drainage in the WSA, and it flows from east to west through the northern part of the WSA.

Rocks of Jurassic and Triassic ages totaling about 2,000 feet and thin deposits of Quaternary basalt crop out in the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 10,000 feet thick (Hintze, 1973). Cross-bedded aeoleon sandstone of the Jurassic Navajo Formation forms the most extensive outcrop in the WSA, with about 1,400 feet exposed in the higher elevations. Approximately 600 feet of the Jurassic-Triassic Kayenta Formation are exposed in the lower elevations.

No faults or other structures are known to occur within the WSA. However, the north-south trending Hurricane Fault occurs 4 miles to the west of the WSA.

Soils

There are some isolated pockets of productive soils within the WSA, but they are very small and undelineated. Most of the soils are mapped by the Washington County Soil Survey (U.S. Department of Agriculture, Soil Conservation Service, 1977) as Paunsaugunt-Kolob-Dalcan association or rock outcrop-rockland association. These are

RED BUTTE WSA

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
RED BUTTE WSA

Resource	Alternatives	
	No Action	All Wilderness (804 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 500 tons of uranium oxide.	Oil and gas likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	About 22 percent of the WSA could be adversely affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.
Livestock	Grazing of 30 AUMs would continue. There are no existing developments. New developments could be allowed; however, none are now planned.	Grazing of 30 AUMs would continue. Little effect on grazing management is expected. New developments proposed in the future might not be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 180 acres, which could reduce visual quality throughout the WSA.	Visual quality could be impaired on up to 20 acres. Overall visual resources would be preserved.
Recreation	Overall recreational use could increase from the present 100 visitor days per year to 149 over the next 20 years. Up to 180 acres of mineral-related disturbance could reduce the quality of primitive recreation.	Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be destroyed on up to 180 acres (22 percent of the WSA), which could degrade wilderness values throughout the WSA. The likelihood of disturbance is low.	Wilderness values would be protected, except on up to 20 acres (2.5 percent of the WSA) which may be disturbed by development of valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with the Washington County's concept of multiple use, State of Utah plans and policies, and the current BLM Virgin River MFP. It would not complement the NPS proposal for nearby wilderness. Disturbance allowed with this alternative would conflict with the Secretary of the Interior's recommendation to transfer the WSA to the contiguous NPS unit.	This alternative would not be consistent with Washington County's policy. It would not conflict with State policy, and would complement the NPS proposal for wilderness. It would be consistent with the recommendation of the Secretary of the Interior to transfer the WSA to the contiguous NPS unit. Designation would constitute an amendment of the BLM Virgin River MFP.
Socio-economics	Annual local sales of less than \$1,010 and Federal revenues of up to \$2,406 would continue. An additional \$48 per year in Federal revenue could be derived from leasing of presently unleased areas.	Annual local sales of less than \$1,010 and Federal revenues of up to \$42 would continue, but Federal revenues of up to \$2,412 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.

excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is moderate to severe. These soils are used for range, wildlife, and recreation and are unsuitable for agriculture. Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	0	0	0
Slight	0.6	604	75	362
Stable	0.3	200	25	60
Total		804	100	422

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

The WSA is composed of the mountain shrub vegetation association. The dominant species in this type are oak, ponderosa pine, big sagebrush, serviceberry, pinyon, juniper, and manzanita. The understory consists of bitterbrush, big sagebrush, rabbitbrush, and bunch grasses.

Available data indicate no threatened, endangered, or sensitive plant species occur in this WSA.

The Red Butte WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) type of the WSA is mountain mahogany-oak scrub. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. There are no existing water rights and the area is presently closed to further applications, although the Utah State Water Engineer has stated some

applications could be considered depending on water use and location. There are no withdrawals present in the unit. There are no perennial surface waters within the WSA. The unit does have potential for well development due to the Navajo Sandstone Formation in the WSA. This formation is known to be a good water producer. There is no present demand for well development.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 1+ was assigned to the Red Butte WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

The low OIR is based on the area's low potential for having economic deposits of minerals.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

Table 3 provides an energy and mineral resource rating summary for the WSA.

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c2	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c1	Low temperature
Hydropower	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

The oil and gas capabilities of the region have been reviewed by SAI (1982). There is no evidence indicating the existence of commercially recoverable oil and gas resources within the WSA.

The Red Butte WSA is approximately 8 miles northeast of the Anderson Junction oil field and 10 miles north of the Virgin Field. Production from these two fields has been low (Anderson Junction, 1,380 barrels; Virgin Field, 201,127 barrels). The Anderson Junction Field has not produced since 1969 and the Virgin Field has produced small amounts of oil intermittently since 1907; costs have generally exceeded profits.

Based on the geologic similarity between these two fields and the WSA, SAI considered the oil and gas favorability of the tract to be low—f2 (less than 10 million barrels of oil and 60 billion cubic feet of natural gas in-place).

Under the current land use plan all 804 acres within the WSA are open to oil and gas leasing with a no surface occupancy stipulation. There are two oil and gas leases in the WSA: a 660-acre pre-FLPMA lease and a 128-acre post-FLPMA lease. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Coal

There are no known coal-bearing rocks within the WSA.

Geothermal

No geothermal resources are known to occur within or near the WSA. According to SAI (1982) the geothermal favorability of the WSA is low with a potential only for low-temperature geothermal resources.

Hydroelectric

The WSA has no potential for hydroelectric power generation.

LOCATABLE MINERALS

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA. No claims have been located within the WSA.

Uranium

No known deposits of uranium exist in the WSA. The WSA is approximately 15 miles northeast of Silver Reef Mining District, a known uranium-producing area. Uranium has been found in the Springdale Sandstone Member of the Moenave Formation. The Moenave Formation crops out .50 mile west of the WSA and is estimated to lie at an average depth of 1,000 feet below the surface in the WSA. SAI (1982) speculates the WSA has a low certainty for occurrence of uranium. It is estimated that the WSA has less than 500 tons of uranium oxide.

Wildlife

The WSA supports a variety of animal species. There are approximately 300 vertebrate animal species that could inhabit the WSA. These include 60 mammal species, 208 bird species, 20

reptile species, 6 amphibian species, and 3 fish species (USDI, BLM, 1979a).

Raptors may include golden eagle, bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common. The bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony Valleys west of the WSA. Occasional sightings of these birds have been made with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur.

An active peregrine falcon nest occurs in Zion National Park east of the WSA. Peregrine falcons have been reported in the Deep Creek-Goose Creek area and in Taylor Creek Canyon, but nesting is not confirmed.

No other threatened or endangered species are known to occur within the WSA. The golden eagle, which may inhabit the WSA, is a BLM sensitive species.

Big game animals include mule deer and mountain lion. The WSA is within the boundaries of Deer Herd Unit 58 and provides winter forage. No critical range is found within the WSA. Hunting pressure is light because access is blocked by private and NPS lands. There are no existing or proposed improvements for wildlife for this area.

Mountain lion activity in the vicinity is heavy compared to other areas in Utah. In past years the Federal government has controlled the cougars in the area to keep livestock predation under control. During the 1976 hunting season 11 cougars were taken from this herd unit, the largest number for any herd unit in the State.

Forest Resources

The major forest resources found in the WSA consist of the pinyon-juniper and scattered ponderosa pine. The WSA has forest resources suitable for firewood, posts, pine nuts, and Christmas tree cutting. However, because of the area's lack of access and the same resources being available elsewhere, there is little use or demand for these purposes.

Livestock and Wild Horses/Burros

The Red Butte WSA covers parts of two custodial allotments (Red Butte and Rock Springs). The

Red Butte Allotment has 14 AUMs within the WSA. The Rock Springs Allotment has 16 AUMs in the WSA. Two permittees are allowed to graze cattle on these allotments. There are no existing and proposed range improvements in the WSA.

No wild horses or burros use the WSA.

Visual Resources

Under the VRM system, the entire WSA is rated Class II. This WSA was judged to be Scenic Class A, exceptional, during preparation of the Virgin River Unit Resource Analysis (USDI, BLM, 1979a). The WSA shares the same features as Zion National Park, one of the nation's most important tourist attractions with a worldwide reputation for scenic splendor. The VRM Class is II. (Refer to Appendix 7 for a description of BLM's VRM rating system.)

The scenery quality rating for the Red Butte WSA is Class A. This designation means that it contains outstanding or dominating features. The unit shares the same features as Zion National Park, one of the nation's most important tourist attractions.

Cultural Resources

Petroglyphs, stone granaries, and rock shelters are known to exist in Zion National Park and the general vicinity. However, no archaeological inventory exists on this specific WSA and no cultural values have been identified.

Recreation

Recreational use of the Red Butte WSA is very limited. It is isolated from the Zion National Park by open terrain and is not in a major use area. Most recreational use would be associated with deer hunting and an occasional rock climber. It is estimated that there are less than 100 visitor days annually. There are no developed recreation facilities in the WSA.

Wilderness Values

SIZE

The Red Butte WSA is approximately 1.50 miles long (north to south) and 1 mile wide (east to west) and encompasses 804 acres. The unit is not a viable independent candidate for wilderness designation if Congress does not designate contiguous NPS-proposed wilderness area in Zion National Park. If managed in part with the contiguous NPS unit, the WSA would be a viable wilderness area.

NATURALNESS

The unit has primarily been affected by the forces of nature. There are no known imprints within the WSA.

SOLITUDE

Outstanding opportunities for solitude are found on approximately 75 percent (603 acres) of the unit. The factors that contribute to solitude are the unit's isolation, difficulty of access, and vegetation screening. Red Butte is situated on the western edge of the lower Kolob Plateau. The butte is bordered by the escarpment above Smith Mesa and Smith Creek on the north and west. Red Butte, Smith Creek Canyon, and the mesa are the most isolated portions of the unit. With the exception of a small open park area of ponderosa pine, the mesa is heavily vegetated with ponderosa pine, oak brush, and other shrubs.

PRIMITIVE AND UNCONFINED RECREATION

Red Butte WSA could offer outstanding opportunities for hiking and backpacking in conjunction with Zion National Park. Technical and non-technical rock climbing and geologic study are possible outstanding recreation opportunities. Red Butte rises 1,200 feet above the lower Kolob Plateau and 1,800 feet above Smith Mesa. Technical routes, in particular, are challenging and the entire butte offers an outstanding climbing opportunity. Overall, outstanding opportunities for primitive and unconfined recreation are found on approximately 180 acres (22 percent) of the unit.

SPECIAL FEATURES

No special features have been identified for this WSA.

Land Use Plans and Controls

The U.S. Government has surface and subsurface ownership of all 804 acres of public land within the WSA boundary. There are no private or State in-holdings or valid existing rights, except for post-FLPMA oil and gas leases associated with this WSA. The BLM is managing the lands through general guidance of the Virgin River MFP which allows multiple uses as noted in the description of the No Action Alternative.

The Red Butte WSA is contiguous with 120,620 acres in Zion National Park that are recommended for wilderness by the NPS. In 1984 the House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214, a bill designed to transfer jurisdiction of certain lands, including the Red Butte WSA, from the BLM to the NPS. In response to the hearing, the NPS as-

essed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984).

The NPS concluded that the WSA would add a minor buffer to the park boundary but would be insignificant in terms of its value and contribution to the NPS area. In a February 6, 1985 letter from the U.S. Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the Red Butte WSA was recommended for inclusion into the adjacent unit of the National Park System. The letter indicated that the WSA did not meet all the NPS criteria for inclusion into the park. However, there was no objection for transferring the WSA from BLM to NPS because the WSA is isolated by park and private lands and is uneconomical for BLM to manage. No Congressional action has been taken on that recommendation.

The *Washington County Master Plan* (Planning and Research Associates, 1971) identifies the WSA as an open space zone, and the Washington County Commission policy does not support wilderness designation for this WSA.

Socioeconomics

Kane and Washington Counties are the local, social, and economic influence zones of the WSA.

DEMOGRAPHICS

Kane County is rural, with a total of 4,024 residents and an average population density of approximately one person per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Washington County is also basically rural, except for the population centers near the City of St. George. The total population of Washington County is 26,065, for an average population density of 10.8 persons per square mile.

EMPLOYMENT

The economies of both Kane and Washington Counties are dominated, in terms of employment, by three sectors: retail trade, services, and government. In Kane County both retail trade and government account for 17 percent of the total employment, and the services sector provides 14 percent. In Washington County the retail trade sector provides 21 percent, government 19 percent, and services 11 percent of the total employment. Employment and income figures for the two counties are presented in Table 4.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral leasing, livestock production, and recreation. Table 5 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Two livestock operators have a total grazing privilege of 30 AUMs within the WSA. If all this forage were utilized, it would account for \$600 of livestock sales and \$150 of ranchers' returns to labor and investment.

Nonmotorized recreational use is moderate and related local expenditures are well distributed. These expenditures are insignificant to both the local economy and individual businesses. The WSA's motorized recreational use is very low and insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Red Butte WSA is estimated as about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Kane and Washington Counties.

The WSA generates Federal revenues from mineral leases and livestock sources (refer to Table 5). Mineral leases in the WSA cover approximately 788 acres. At up to \$3 per acre, lease rental fees generate up to \$2,364 of Federal revenues annually. Half of these monies are allocated to the State, which in turn reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

The livestock permittees in the WSA can use up to 30 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$42 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

TABLE 4
1980 Employment and Personal Income
Kane and Washington Counties, Utah

Industrial Sector	Kane County		Washington County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	1,452	12,595	7,866	83,449
Proprietors	382	2,623	1,469	14,010
Farm				
Proprietors	122	136	343	2,386
Nonfarm				
Proprietors	260	2,487	1,126	11,624
By Industry Source				
Farm	27	382	98	3,031
Nonfarm	1,043	12,213	6,299	80,418
Private	798	9,614	4,805	63,399
Ag. Serv., For.,				
Fish and				
Other	(L)	0	29	724
Mining	17	196	70	1,347
Construction	51	1,544	537	9,425
Manufacturing	70	566	698	9,759
Nondurable				
Goods	(D)	(D)	441	5,986
Durable				
Goods	(D)	(D)	257	3,773
Transportation and Public				
Utilities	150	1,875	236	4,996
Wholesale				
Trade	12	230	263	3,963
Retail Trade	252	2,364	1,673	14,741
Finance,				
Insurance and				
Real Estate	39	392	424	5,201
Services	202	2,427	875	13,243
Government and Government				
Enterprises	245	2,599	1,494	17,019
Federal, Civilian	18	252	193	2,725
Federal, Military	30	78	161	425
State and Local	197	2,269	1,140	13,869

Source: USDC, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.
(L) Less than 10 wage and salary jobs.

TABLE 5
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$2,364
Mineral Production	0	0
Mining Claim		
Assessment	0	0
Livestock Grazing	\$600	\$42
Woodland Products	0	0
Recreational Use	Less than \$410	0
Total	Less than \$1,010	Up to \$2,406

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from: (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but would probably be low due to the WSA's rough

terrain and limited resource potential. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and cause the following disturbance: oil and gas, 160 acres; and uranium, 20 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If uranium and oil and gas were developed, air quality could be reduced up to the PSD Class II limitations. However, the proximity of the WSA to Zion National Park could result in restriction of the development to meet PSD Class I limitations. Disturbance of 180 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because disturbances associated with uranium and oil and gas exploration and development activities would mainly be near the surface. This would not significantly affect the area's geology.

SOILS

It is estimated that up to 180 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with slight erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 180 acres would increase from 108 cubic yards/year to 234 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 126 cubic yards (3 percent) over current annual soil loss.

VEGETATION

The anticipated maximum of 180 acres disturbed would significantly alter the unit's vegetation because approximately 22 percent of the WSA would be disturbed. Impacts to the surrounding area's vegetation resource, however, would be insignificant because of the large acreages of similar vegetation.

WATER RESOURCES

Since Virgin River and LaVerkin Creek are heavy silt carriers, no significant change in sedimentation or change in total dissolved solids (TDS) is expected to occur from the 126 cubic yards of annual soil loss from surface disturbance. Oppor-

tunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Virgin River Planning Unit.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for up to 10 million barrels of oil in-place and up to 60 billion cubic feet of natural gas exists within the WSA and surrounding area. These oil and gas resources could be explored and developed, subject to Category 1 stipulations and would not be affected by adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposits of up to 500 tons of uranium oxide could be developed. Approximately 20 acres could be disturbed due to exploration and development of this mineral resource. However, the likelihood for development is thought to be minimal because of extremely low resource potential and economic considerations.

WILDLIFE

Under this alternative, wildlife could be affected by disturbance of an estimated 180 acres (22 percent of the WSA) by mineral and energy development and exploration. Deer, mountain lion, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or coexist with these disturbances at smaller population levels.

The endangered bald eagle and peregrine falcon and the sensitive golden eagle may inhabit the WSA. Before authorizing surface-disturbing activities (180 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed acres and informally consult with the Fish and Wildlife Service (FWS). If threatened or endangered species could be affected, the BLM would initiate formal Section 7 consultation with the FWS under provisions of the Endangered Species Act, as required by BLM policy (refer to

Appendix 4). Because appropriate mitigating measures would be taken, it can be reasonably concluded that the viability of populations of threatened or endangered species would be preserved. There are no planned wildlife improvements in the WSA.

FOREST RESOURCES

Since the majority of the area is covered by mountain shrub and pinyon juniper, none of which is presently utilized (except by occasional campers or hikers), no significant harvest or loss of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Virgin River MFP. The 30 AUMs currently allocated in the WSA are controlled by two livestock permittees. Since very little use of motorized vehicles is currently being made to manage livestock, little change in livestock management is expected. There are no planned livestock improvements in the WSA but additional roads or other facilities could be proposed and developed in the future without regard for wilderness values.

VISUAL RESOURCES

Visual values in areas affected by the estimated 180 acres of surface disturbance from mineral and energy exploration and development would be degraded and, if within VRM Class II areas, management objectives would not be met. Even after rehabilitation, some permanent localized degradation would be expected and visual resources could be degraded throughout the WSA. However, the potential for mineral development is extremely low.

CULTURAL RESOURCES

Disturbance of 180 acres by mineral exploration and development under this alternative could affect cultural resources. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts.

Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism could be a problem and would increase in proportion to the general population increase.

RECREATION

Up to 180 acres could be disturbed by mineral and energy activities. Primitive recreational opportuni-

ities could be diminished on the affected areas and throughout the WSA. The future trend in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 100 current visitor days per year to 149 at the end of 20 years. Overflow from Zion National Park could further increase use.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Virgin River MFP. Potential mineral and energy exploration and development could disturb an estimated 180 acres. Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) could be lost or diminished in affected areas. However, the impacts to these values probably would not be significant due to the low probability of surface disturbance and reclamation practices.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Washington County Master Plan* which recommends multiple use, but it would not complement the NPS proposal of wilderness designation for their adjacent area. Surface disturbance allowed with this alternative would conflict with the Secretary of Interior's recommendation to transfer the WSA to the NPS. The No Action Alternative is based on implementation of the current BLM Virgin River Planning Unit MFP and is, therefore, in conformance with it.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the uranium and oil and gas in the WSA were developed, it could lead to increased employment and income for Washington County. However, the probability of economic development of minerals within the WSA is low.

There would be no livestock-related economic losses because the existing grazing use (30 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$600 annually in livestock sales and \$150 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase 149 visitor days per year over the next 20 years and overall recreation-related expenditures average \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be very significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 16 acres in the WSA open to leases that are currently not leased. If leased they would bring up to \$48 additional Federal lease fee revenues per year in addition to any royalties from lease production. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$42 per year) would continue.

All Wilderness Alternative (804 Acres) (Proposed Action)

As noted in the Description of the Alternatives section the major changes that could occur in the 804-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). The WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that mining claims would be located before designation and eventually be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates for the WSA.)

Because potentially disturbed areas would be smaller than under the No Action Alternative (20 vs. 180 acres), the impacts from development and surface disturbance on air quality, geology, vegetation, water, and forest resources would be insignificant for the All Wilderness Alternative. Wilderness designation would provide additional protection for these resources as compared to the No Action Alternative.

SOILS

The soil resource could benefit from the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities.

Assuming that all disturbance would occur in areas with slight erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 20 acres would increase from 12 cubic yards/year to 26 cubic yards/year from the present situation. However, soil loss would decrease as reclamation occurred. The time for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual increase in soil loss from surface disturbance in the WSA would be approximately 14 cubic yards, which is 112 cubic yards less than for the No Action Alternative.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Approximately 788 acres are under oil and gas lease. However, no exploration or development of oil and gas is presently occurring within the WSA, and none is expected to occur before designation. Therefore, the potential resource of up to 10 million barrels of oil (3 million recoverable) and less than 60 billion cubic feet of natural gas (18 billion recoverable) would be foregone under this alternative.

Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant impacts to the oil and gas resource.

LOCATABLE MINERALS

There are presently no mining claims within the WSA. Up to 500 tons of uranium oxide that are recoverable could occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 20 acres could be disturbed due to exploration and development of these locatable mineral resources.

The worst-case impact to minerals would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of up to 500 tons of uranium oxide would be foregone. Because production of this metal is not currently occurring and because economic considerations (e.g.,

transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not result in a significant loss of potentially recoverable uranium resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude and the possibility that less acres would be disturbed. The disturbance of 20 acres due to exploration of locatable mineral resources could disrupt wildlife populations on the affected areas but would not result in species leaving the WSA. Appropriate measures would be taken to protect threatened, endangered, and sensitive species as described for the No Action Alternative. These species would benefit from decreased disturbance and preservation of solitude in the WSA.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Virgin River MFP. The 30 AUMs currently allocated in the WSA are controlled by two livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values.

VISUAL RESOURCES

A slight benefit would occur to the visual resources of the WSA because the VRM class would change from Class II to the more restrictive Class I. That class generally allows only natural ecological changes and, therefore, would help reduce the potential for surface-disturbing activities to about 20 acres. Thus, there could be localized long-term degradation of values in disturbed areas. However, no significant impact in the area as a whole would be expected.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Since much of the estimated recreational use (100 visitor days) is associated with hunting, no significant impact is anticipated due to designation.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation and the WSA's proximity to Zion National Park could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use. The quality of the primitive recreation experience probably would not be negatively affected by the increased use.

Mineral-related surface disturbance on up to 20 acres could cause localized impairment of recreational values. However, potential for mineral development is low.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values. Recreation opportunities in Zion National Park would also be protected and enhanced by complementary management in this WSA.

WILDERNESS VALUES

Designation and management of all 804 acres as wilderness would assure the preservation of the wilderness values of naturalness and outstanding opportunities for solitude (600 acres) and primitive recreation (180 acres). Designation would also complement these values within Zion National Park. The scenic special feature in this WSA would also be protected and preserved.

Opportunities for primitive recreation, solitude, and special features could be degraded in localized areas where an estimated 20 acres of surface disturbance could result from allowable mineral exploration activities. These disturbances could have long-term effects on primitive recreation values and special features.

Thus, it is concluded that wilderness designation and management of all 804 acres of the Red Butte WSA would protect and preserve its wilderness values except in localized areas affected by surface disturbance related to mineral exploration.

LAND USE PLANS AND CONTROLS

In Zion National Park the area adjoining this unit

has been proposed as wilderness. This alternative would complement the NPS wilderness proposal. Wilderness designation would not conflict with the U.S. Secretary of the Interior's recommendation to transfer the WSA to the NPS.

The existing BLM Virgin River MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the MFP.

The *Washington County Master Plan* recommends multiple use of all public lands in the county. This alternative would not totally conflict with the multiple-use concept since many existing uses would continue, although under more restrictive conditions. However, this alternative would conflict with the county's multiple-use concept because restrictive conditions would be placed on mineral development and oil and gas leases would not be renewed.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be some losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 5) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low. Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$600 of livestock sales and \$150 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income. No such potential range improvements have been proposed.

RED BUTTE WSA

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would only cause slight increases to the local community.

The loss of 788 acres now leased for oil and gas would cause an eventual loss of up to \$2,364 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$48 annually in Federal revenues from the 16 acres that could be leased without designation. In addition to these rental fees, any potential royalties from lease production could also be foregone.

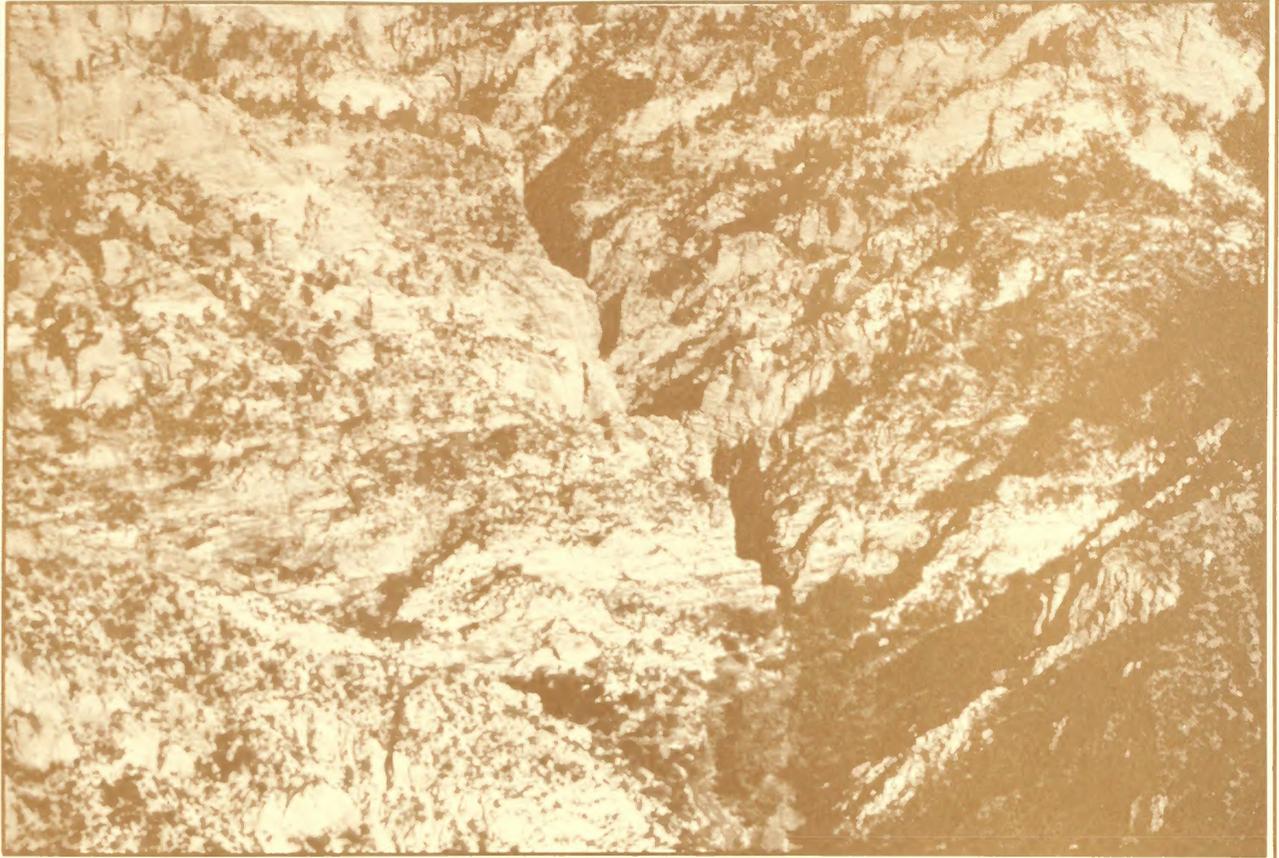
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Spring Creek Canyon WSA



SPRING CREEK CANYON WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative (Proposed Action).....	4
Summary of Environmental Consequences	6
AFFECTED ENVIRONMENT	6
Air Quality	6
Geology	6
Soils	6
Vegetation	8
Water Resources	8
Mineral and Energy Resources	8
Wildlife	10
Forest Resources	10
Livestock and Wild Horses/Burros	10
Visual Resources	10
Cultural Resources	10
Recreation	10
Wilderness Values	11
Land Use Plans and Controls	11
Socioeconomics	12
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	13
Analysis Assumptions and Guidelines for All Alternatives	13
No Action Alternative	13
All Wilderness Alternative (Proposed Action).....	16
BIBLIOGRAPHY	19

SPRING CREEK CANYON WSA (UT-040-148)

INTRODUCTION

General Description of the Area

Spring Creek Canyon lies along the boundary of Zion National Park in the southeast corner of Iron County. It is adjacent to a National Park Service (NPS) administratively endorsed wilderness proposal encompassing 120,620 acres. Spring Creek Canyon Wilderness Study Area (WSA) contains 4,433 acres administered by the BLM's Cedar City District.

The WSA's topography is dominated by Spring Creek and Kanarra Creek drainages and the Hurricane Cliffs. The top of the Hurricane Cliffs are 2,000 to 3,000 feet above the valley floor. The climate within the WSA is considered mild with average temperatures ranging from the low 40s during the winter months to the high 80s during mid-summer. Temperature extremes can vary from 18 degrees Fahrenheit (F) to 100 degrees F. Average annual precipitation is 17 inches with about half occurring in the form of winter snow and half during summer thunderstorms. Winds usually prevail from the southwest with the strongest winds occurring in March and April.

There are no private or State lands located within the WSA; however, two State sections almost cut the WSA in half.

This WSA was dropped from wilderness study status by the Secretary of the Interior on December 30, 1982 due to its small size. As a result of a decision of the Eastern District Court of California (*Sierra Club vs. Watt*, No. Civil 5-83-035 LRK, dated April 18, 1985) it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA); and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres if they are adjacent to land with wilderness potential administered by other Federal agencies.

Specific Issues Identified in Scoping

Public opportunity to review and comment on an initial draft analysis of this area occurred in August 1982. Because of the 1982 decision of the Secretary of the Interior, the area was not among those listed in the brochure used for the 1984 EIS scoping meetings (USDI, BLM, 1984a); however,

the specific issues and concerns expressed earlier apply and are as follows:

1. *Comment:* Based on size, this area does not qualify for further consideration as a wilderness area. All other normal considerations mandated as a part of the EIS must be adequately treated to the satisfaction of the Commission.

Response: This WSA is adjacent to a proposed wilderness area in Zion National Park. BLM has authority under Section 202 of FLPMA to study units of less than 5,000 acres.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal land use plans?

Response: Consistency with land use plans is discussed in the Land Use Plans and Controls sections of this document. Management following wilderness designation of this unit would be consistent with management of the proposed wilderness area in Zion National Park.

The public made several comments during the public comment period for the *Cedar-Beaver-Garfield-Antimony (CBGA) Resource Management Plan (RMP)* (USDI, BLM, 1984c) concerning Spring Creek Canyon. Issues addressed included protection of the backcountry values, scenic values, wildlife habitat, impacts of coal development in the adjacent Kolob potential development area, off-road vehicle (ORV) management, and consideration of Spring Canyon as wilderness.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Studies of the Spring Creek Canyon WSA have not identified any resource conflicts that would be reduced by a partial alternative; therefore, no partial wilderness alternatives were considered.



SPRING CREEK CANYON WSA

Transfer of several WSAs, including Spring Creek Canyon WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, because BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness and because the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits, and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM "Wilderness Study Policy" (USDI, BLM, 1982b) requires the BLM in its Wilderness Study Report to determine whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land and, if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency administering the contiguous wilderness area.

BLM has determined that the Spring Creek Canyon WSA would not be a viable independent wilderness area if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions (i.e., relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items). Environmental differences if any, would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation and, therefore, are not relevant to the analyses of impacts from wilderness designation.

vant to the analyses of impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (4,433 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 4,433-acre Spring Creek Canyon WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would be managed in accordance with the proposed *CBGA RMP*. Two State sections lie adjacent to the WSA (refer to Map 1).

The following are specific actions that would take place under this alternative:

- All 4,433 acres would remain open to mineral location, leasing, and sale. There are no mining claims in the WSA at the present time. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing (4,250 acres) and future oil and gas leases could be developed under special stipulations (Category 2) on the 4,433-acre area.
- The present domestic livestock grazing use of 30 Animal Unit Months (AUMs) would continue as authorized in the proposed *CBGA RMP*. There are no existing range developments in the WSA. About .5 mile of a water pipeline is within the WSA but no water from the pipeline is available inside the WSA. New rangeland developments could be implemented without wilderness considerations. No developments are currently planned.
- Developments for wildlife, water resources, etc. would be allowed without concern for wilderness values if in conformance with the current BLM land use plan. None of these developments are currently planned.
- The entire WSA acreage would be open to vehicular use and new access routes would be allowed.
- The entire area would be open to woodland

SPRING CREEK CANYON WSA

Map 1 LAND STATUS Spring Creek Canyon WSA UT-040-148

Legend

-  WSA Boundary
-  Zion National Park Boundary
-  State Land Within or Adjacent to WSA
-  National Park Service Administered Land
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA

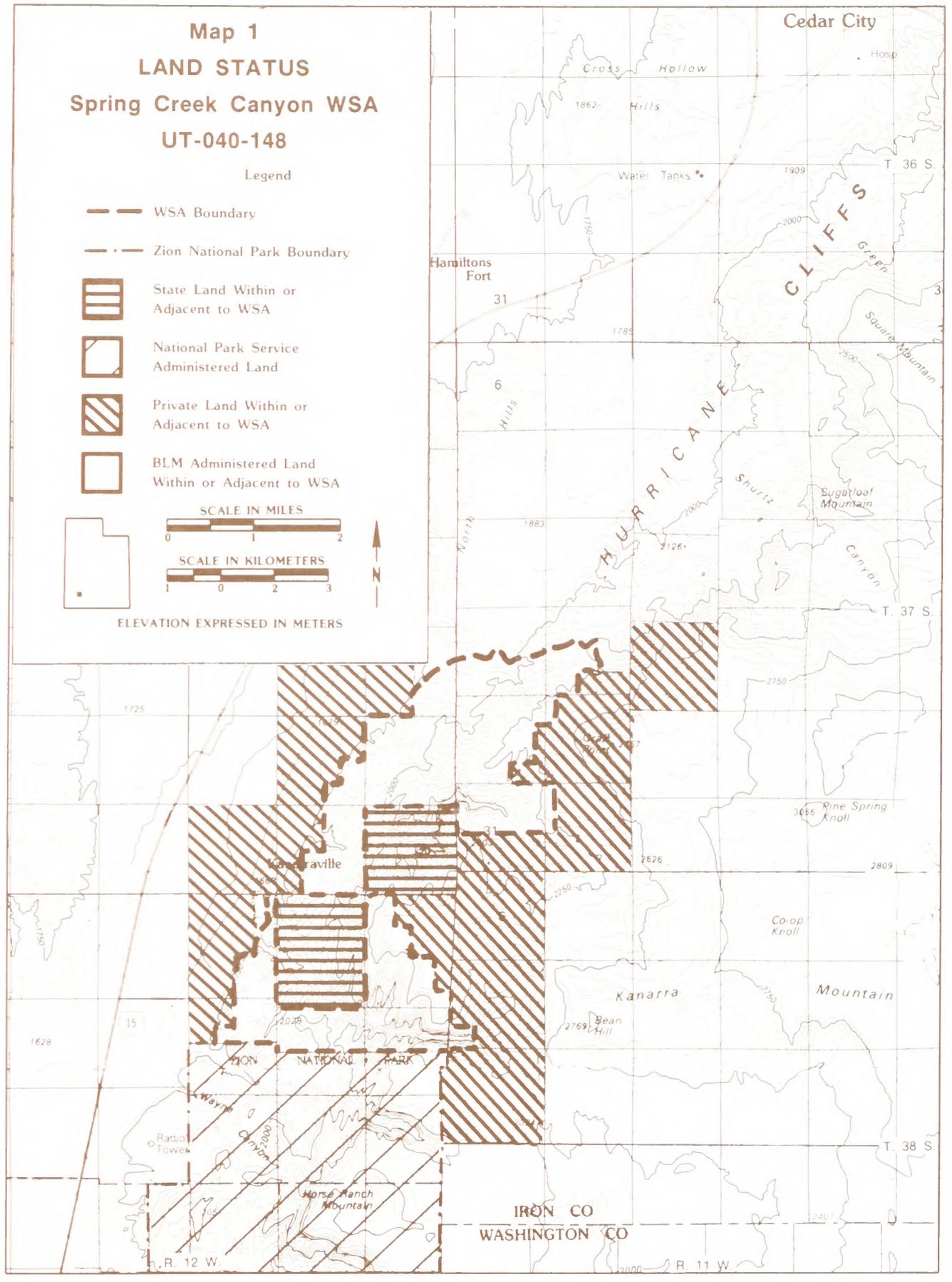
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



SPRING CREEK CANYON WSA

product harvest. There is no harvest of forest products at the present time, nor is any planned.

- The entire area would continue to be managed under Visual Resource Management (VRM) Class II.
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 4,433 acres of the Spring Creek Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA lies adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can be managed only in part with the NPS-proposed wilderness. As a result, the Spring Creek Canyon WSA could be retained by BLM or transferred (along with nine other small WSAs) to the NPS, who would then assume management responsibilities. For the purposes of this analysis it is assumed that BLM would retain management of the Spring Creek Canyon WSA and would manage it in part with the contiguous NPS-proposed wilderness in accordance with the BLM "Wilderness Management Policy" to preserve its wilderness character.

Two State sections located adjacent to the WSA would likely be exchanged (refer to Map 1). The figures and acreages are for Federal lands only. No private or split estate lands are located in the WSA.

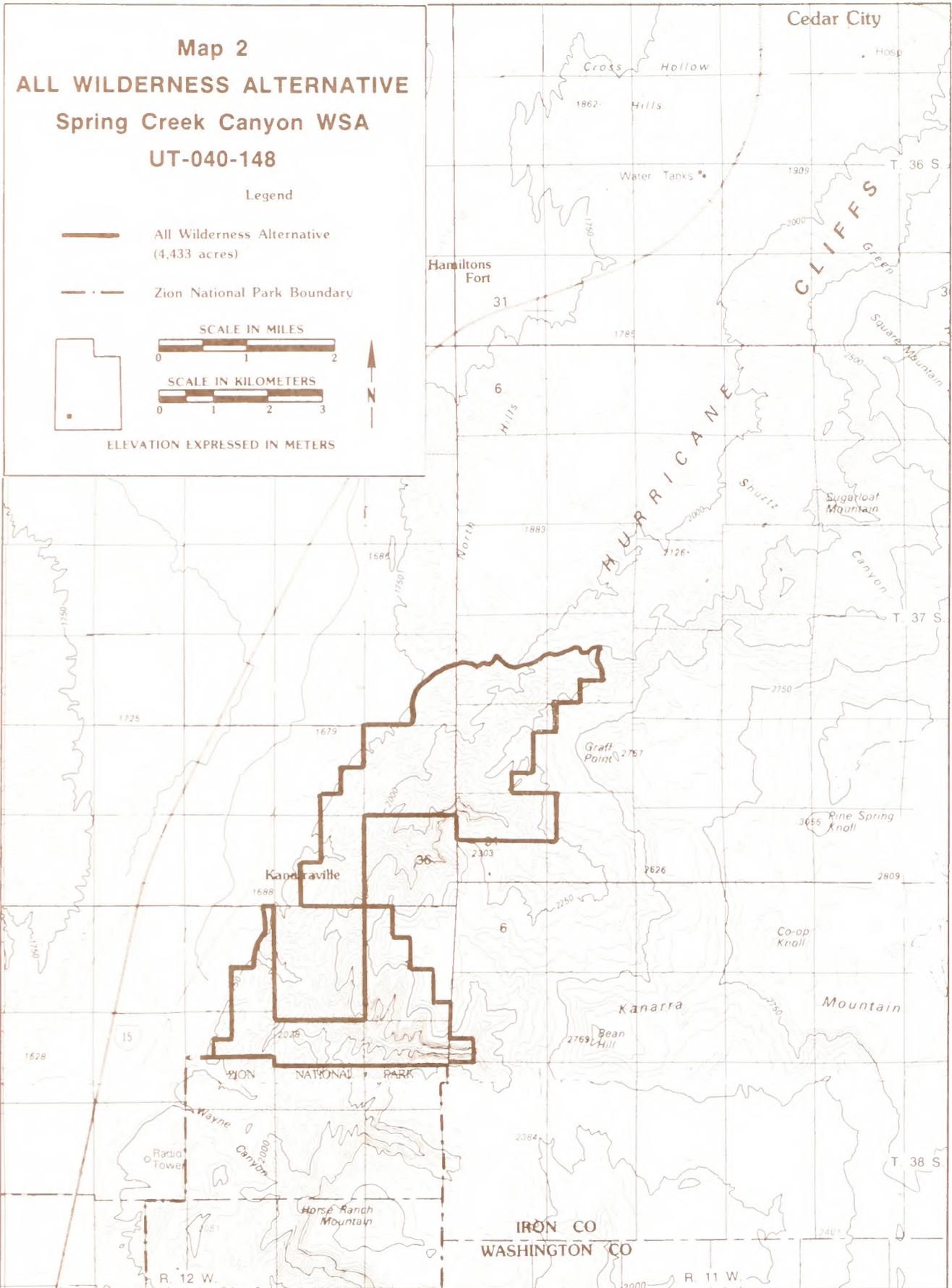
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 4,433

acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims have been located in the WSA. Existing oil and gas leases involving 4,250 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown.

- Present domestic livestock grazing would be allowed to continue as authorized in the proposed *CBGA RMP*. The 33 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation could continue in the same manner as in the past based on practical necessity and reasonableness. There is .5 mile of water pipelines in the WSA at present. After designation, new developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness resource protection and management. Currently, no rangeland developments are planned.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Spring Creek Canyon WSA, and none are currently planned. There is a certain pipeline in Kanarra Canyon that extends across the WSA.
- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 4,433-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. There is .50 mile of way in the WSA and roads form the boundary of the WSA for approximately 2 miles.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-

SPRING CREEK CANYON WSA



down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.

- A specific Wilderness Management Plan would be developed to govern use and protection of the 4,433-acre wilderness.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent non-wilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences that would result from implementation of the alternatives. Only those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

Air quality is excellent (Prevention of Significant Deterioration [PSD] Class II). Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM, 1980c). Zion National Park is designated as Class I under the PSD regulations.

Geology

The WSA is predominantly sedimentary rock of Permian, Triassic, and Jurassic age. The exposed west edge of the Hurricane Fault is the commonly accepted boundary between the Colorado Plateau and Basin and Range. Most of the WSA is very steep terrain dissected by the east-west Hurricane Fault which causes an abrupt 2,300-foot elevation change.

Cedar Valley forms the western edge of the unit at an elevation of 5,500 feet rising easterly to mountainous terrain reaching nearly 8,000 feet. Intermittent and perennial drainages dissipate as they emerge onto the valley floor forming alluvial valley fans. The prevailing exposure is to the east of Interstate 15 (I-15) and the dividing and subdividing canyons with their multi-hued, weathered surfaces provide superb scenery for travelers along I-15. The broken, ragged landscape provides the topographic screening for solitude and serves as an effective barrier to most user access.

Soils

The soils on this unit are highly erodible, shallow, rocky, gravelly loams derived from sedimentary parent material. Bedrock (often limestone) lies at a depth of 10 to 20 inches. Slopes are steep to very steep. These soils are among the poorest classes, are highly susceptible to erosion, and have very poor rehabilitation potential. Their best uses are grazing, wildlife habitat, and nonmotorized dispersed forms of recreation.

SPRING CREEK CANYON WSA

TABLE 1 SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES SPRING CREEK CANYON WSA

Resource	Alternatives	
	No Action	All Wilderness (4,433 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, and 500 tons of uranium oxide.	Oil and gas likely would not be recovered. Assuming a worst-case analysis, uranium recovery would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	About 4 percent of the WSA could be adversely affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.
Livestock	Grazing of 33 AUMs would continue. There are no existing developments. New developments could be allowed; however, none are now proposed.	Grazing of 33 AUMs would continue. Little effect on grazing management is expected. New developments proposed in the future might not be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 180 acres.	Visual quality could be impaired on up to 20 acres.
Recreation	ORV use could continue on 0.5 mile of way. Overall recreational use could increase from the present 700 visitor days per year to 1,040 over the next 20 years. Up to 180 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 0.5 mile of way, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 180 acres (4 percent of the WSA).	Wilderness values would be protected, except on up to 20 acres (about 0.5 percent of the WSA) which may be disturbed by development of valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with Iron County's concept of multiple use, State of Utah plans and policies, and the proposed BLM Cedar-Beaver-Garfield-Antimony RMP. It would not complement the NPS proposal for wilderness on contiguous NPS lands. Disturbance allowed with this alternative would conflict with the Secretary of the Interior's recommendation to transfer a portion of the WSA to the contiguous NPS unit. No Action would allow for a proposed water pipeline in Spring Creek Canyon to provide culinary water to Kanarraville.	This alternative would not be consistent with Iron County policy. It would not conflict with State policy, and would complement the NPS proposal for wilderness. It would be consistent with the recommendations of the Secretary of the Interior to transfer 1607 acres of the WSA to the adjacent NPS unit. Designation would constitute an amendment of the BLM Cedar-Beaver-Garfield-Antimony RMP. Wilderness designation would conflict with the Kanarraville proposal for a culinary water pipeline in Spring Creek Canyon.
Socio-economics	Annual local sales of less than \$3,530 and Federal revenues of up to \$12,796 would continue. An additional \$549 per year in Federal revenue could be derived from leasing of presently unleased areas.	Annual local sales of less than \$3,530 and Federal revenues of up to \$46 would continue, but Federal revenues of up to \$13,299 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.

SPRING CREEK CANYON WSA

Erosion condition, as determined by using soil surface factors, is summarized in Table 2 (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	700	16	910
Slight	0.6	533	12	320
Stable	0.3	3,200	72	960
Total		4,433	100	2,190

Sources: USDI, BLM, 1984c; Leifeste, 1978.

Vegetation

This WSA lies along the transition zone. Plant species representative of the high elevations include aspen, Douglas fir, ponderosa pine, and Gambel's oak with understory shrubs such as mountain mahogany, snowberry, chokecherry, manzanita, currant, and elderberry. Associated grasses include bluebunch wheatgrass, slender wheatgrass, mountain brome, orchard-grass, and needle and thread. There is seldom a dense cover of vegetation. Plants are spaced to take advantage of available moisture so there is heavier vegetation on the north- and west-facing slopes. The lower elevations are characterized by dry side slopes hosting pinyon pine, Utah juniper, Gambel's oak, Utah serviceberry, curl-leaf mountain mahogany, cliffrose, single-leaf ash, and sagebrush with associated grasses such as galleta, Indian ricegrass, squirreltail, threeawn, muttongrass, and cheatgrass. These open exposures have an overstory canopy of 10 to 20 percent resulting in a scrubby landscape with much exposed rock.

Dissecting the WSA are the perennial drainages where riparian vegetation flourishes in contrast to the dry slopes. Sedges, rushes, willows, cottonwoods, velvet ash, maples, blackberry, chokecherry, birch, and associated grasses are found in the riparian areas.

Available data indicate no sensitive, threatened, or endangered plant species occur in this WSA.

This WSA is in the transition of the Intermountain Sagebrush and Rocky Mountain Forest Province Ecoregions, as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978).

The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland (USDI, Geological Survey, 1978). PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

There are two main perennial water drainages (2.5 miles) in this WSA, Kanarra Creek and Spring Creek. The Town of Kanarraville (population of 250) pipes its culinary water from Kanarra Creek within the WSA. One individual has rights on a spring within the unit. The water quality is suitable for these uses as there are no point sources of pollution with the WSA. There are no known wells within the WSA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 2 was assigned to the Spring Creek Canyon WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stockpiling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to

SPRING CREEK CANYON WSA

supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 3.

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c2	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Uranium	f2	c1	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f2	c1	Low temperature (Less than 90° F.)
Hydroelectric	f2	c4	05 to 15 megawatts

Source: SAI, 1982

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-

FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

All 4,433 acres in this WSA are open to oil and gas leasing with special stipulations (Category 2). There are 935 acres under a pre-FLPMA (valid existing right) lease and 3,315 acres under a post-FLPMA lease with special protective stipulations. Based on similarities between the Anderson Junction Oil Field (located approximately 12 miles south of the WSA) and this WSA and on the relatively unsuccessful history of exploration to date in the region, oil and gas favorability is considered low even though there is a potential for less than 10 million barrels of oil and 60 billion cubic feet of natural gas in-place.

Coal

The WSA is underlain by pre-Cretaceous rock not known to contain any coal.

Geothermal

This is a favorable region for geothermal resources but the nearest known springs are 20 to 40 miles to the southwest. Therefore, this WSA has been assigned a favorability of 2. Since there is not direct evidence to support this rating the certainty is only 1.

Hydroelectric

There is physical potential (f2) for small scale hydroelectric resources on the perennial Spring Creek (this does not consider the economic feasibility of construction). The certainty of this resource occurrence is high (c4).

LOCATABLE MINERALS

No prospects, claims, or any other evidence of mineralization are known to exist within the WSA.

Uranium

The Silver Reef District, 23 miles to the south, is the closest uranium-producing area. Minor amounts of uranium have been obtained from the Springdale Sandstone Member of the Moenave Formation. The Moenave and Chinle (somewhat favorable for uranium) crop out in the WSA. This WSA received a favorability rating of 2 with a certainty of 1 that uranium deposits exist (SAI, 1982).

Wildlife

The WSA is an unusual area for wildlife. Near Kanarraville is the southernmost extension of the Great Basin. The eastern boundary is the Hurricane Cliffs. These cliffs are also a dramatic divider between the Basin and Range and the Colorado Plateau to the east. Therefore, these two regions allow some overlap of species distribution common to each.

Approximately 198 vertebrate animal species can theoretically live in the WSA. These include 45 mammal species, 130 bird species, 5 amphibian species, and 18 reptile species.

One active peregrine falcon (*Falco peregrinus*) nest is known to exist in the WSA in Spring Creek Canyon. One other Federally endangered wildlife species, bald eagle (*Haliaeetus leucocephalus*), is also suspected to be using the WSA. Bald eagles winter in the Cedar and Kanarraville valleys and can be regularly sighted from late October through mid-April. These birds are suspected of nesting or roosting in some of the steep canyons of the WSA. Bald eagles perch in the cottonwood trees along the western boundary and the peregrine falcon has been sighted near Quichapa Lake west of the WSA. However, these birds are considered migrants. Adjacent Zion National Park is supporting a breeding pair of peregrine falcons. The habitat in Spring Canyon and Kanarra Creek supports a terrestrial prey-based prairie falcon population and contains nesting terrain. Numerous active and inactive golden eagle nests have been located in Spring Creek and Kanarra Creek drainages outside the WSA. Other sensitive wildlife species that could exist in this WSA are: spotted bat, long-tailed pocket mouse, short-tailed weasel, Utah tiger salamander, Utah milk snake, Utah mountain king snake, merlin, road runner, spotted owl, Lewis woodpecker, and western and mountain bluebirds.

Mule deer and mountain lion are the important big game species. The western and northern foothills and slopes of the WSA are considered critical winter range for mule deer. The remainder of the unit is generally yearlong range.

No acres are planned for vegetation treatment nor are any wildlife facilities proposed.

Forest Resources

There is no commercial value to the forest resources on this WSA. Inventory conducted for the proposed CBGA RMP indicates that the WSA is non-forest land.

Livestock and Wild Horses/Burros

Most of this WSA is not conducive to livestock grazing because of steep terrain, fragile soils, low forage production, and no potential for range improvement. A total of 33 AUMS of forage per year are available for livestock.

The four permittees on three allotments (Kanarra Mountain, Spring Creek, and Sweetwater) have not utilized their grazing privileges in recent years. There are no range improvement structures and none are planned.

There are no wild horses or wild burros in this WSA.

Visual Resources

Approximately 3,233 acres were judged to be Class A quality scenery because of predominant relief features, exceptionally striking color contrasts, variety of interesting forms of vegetation types, cascading water, unusual canyons, and no discordant sites and influences of man. Approximately 1,200 acres in the northern portion of the unit were rated as Class B scenery because, although there are some outstanding features similar to those found in the Class A area, most of the unit is fairly common to the physiographic region. The VRM management class is II. Refer to Appendix 7 for a description of BLM's VRM rating system.

Cultural Resources

No archaeological inventory exists for this specific WSA and no cultural values have been identified.

Recreation

There are no data available to accurately determine visitor use in this WSA. Access from the west side is via primitive dirt ways up Kanarra Creek and Spring Creek. The county-maintained road from Cedar Mountain to Kolob Reservoir parallels the east boundary. This road is commonly used by wheeled vehicles for 8 months and snowmobiles for 4 months per year. Many people wander over to the ridges to view the scenery, hunt, picnic, and hike into the WSA, but use figures are not available. Some limited ORV use occurs in Spring Creek Canyon, usually terminated in State Section 2 by rough terrain. It is estimated that annual use does not exceed 700 visitor days.

The colorful canyons offer excellent hiking, photography, backpacking, ice climbing, rock climb-

ing, horseback riding, and hunting. The latter two are somewhat restricted due to the rough topography. Ice climbing was added to the list of recreational opportunities as a result of public comments during the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980b). Apparently this activity is enjoyed at Kanarra Creek during winter months, but the extent of use is not known.

Wilderness Values

SIZE

The Spring Creek Canyon WSA is approximately 6 miles long and 3 miles wide, encompassing 4,433 acres. The WSA is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous proposed wilderness area in Zion National Park. If managed in part with the contiguous NPS unit, the WSA would be a viable wilderness area.

NATURALNESS

Short vehicular ways are found in the mouths of Spring Creek and Kanarra Canyon. Combined they are about .5 mile long. There is also a water pipeline in Kanarra Canyon and a fenced community dump site near the mouth of Spring Creek Canyon. The water pipeline crossed about .5 mile of the WSA and the dump is outside the WSA boundaries.

SOLITUDE

The WSA is an extremely rugged area and superior topographic screening is present in virtually the entire WSA. Kanarra and Spring Creek Canyons occupy over 66 percent of the WSA.

The Spring Canyon system is an extremely rugged dissected area. The upper elevations and upper portions of the canyon possess a moderately dense spruce-fir cover. Because of the vegetation and topographic screening, visitors can find opportunities to screen themselves from one another.

The northern area which includes Kanarra Canyon also exhibits features similar to those contributing to solitude in the Spring Creek Canyon section.

Topographic screening is the major factor contributing to the opportunity for solitude in the WSA. Forests and dense riparian vegetation in Kanarra and Spring Creek Canyons enhance the topographic screening in the WSA.

The relief in the WSA is tremendous. An elevation drop of almost 3,000 feet in 1 mile is maintained throughout the unit. At the base of the WSA, the

flats and the face of the initial ridge do not provide an opportunity for solitude. In the upper portions, where Woods Hollow and Oak Spring Flat extend into the WSA, the opportunity is also lacking. With these exclusions, approximately 3,728 acres (84 percent) of the WSA possess outstanding opportunities for solitude.

PRIMITIVE AND UNCONFINED RECREATION

The Spring Creek and Kanarra Canyon systems offer outstanding hiking, exploring, and backpacking opportunities. Almost 50 percent of the 6.50-mile Spring Canyon system is within the unit. The most entrenched portion of the canyon system is within the unit.

The sandstone ridge and cliffs that extend north of Kanarra Canyon also provide numerous options for hiking and backpacking. Much of this rugged area lacks well-defined routes and is conducive to exploration. Some of the lower ridges in this area would offer only mediocre foot travel experiences. Because of the perspectives into the canyons below, the portions of Woods Hollow, the Saucer, and Oak Spring Flat in the WSA are excellent hiking areas. Outstanding opportunities for primitive and unconfined recreation are present on approximately 3,568 acres of the WSA.

SPECIAL FEATURES

The WSA has exceptional scenic values as natural extensions of Zion National Park.

Land Use Plans and Controls

There are no State or private in-holdings or subsurface rights in the WSA. Presently the WSA is being used as open space. There are no significant specific land uses in progress. There is a short easement (approximately .50 mile) for crossing of a water pipeline at the southwest corner of the unit. This was issued to Kanarrville Town Corporation on July 29, 1969. There is a proposal for another water pipeline down Spring Creek (within the WSA boundary) to Kanarrville and a proposed right-of-way outside the east boundary for a water line from Kolob Reservoir to Cedar City. However, there are no pending applications.

The Spring Creek Canyon WSA is contiguous with 120,620 acres in Zion National Park that are recommended for wilderness by the NPS. The House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214 (1984), a bill designed to transfer jurisdiction of certain lands, including the Spring Creek Canyon WSA, from the BLM to the NPS. In response to the hearing, the NPS assessed the WSA to determine

its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984). The NPS concluded that the WSA would add a minor buffer to the park boundary but would be insignificant in terms of its value and contribution to the NPS area.

In a February 6, 1985 letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, 1,607 acres of Spring Creek Canyon WSA were recommended as suitable for inclusion into the adjacent unit of the National Park System. The letter indicated the WSA did not meet all the NPS criteria for inclusion into the park. However, there was no objection to transferring the WSA from BLM to NPS because the WSA is isolated by park and private lands and is uneconomical for BLM to manage. No Congressional action has been taken on that recommendation.

The Iron County Planning Commission (1982) appears to have no land use plans for this unit. The *Iron County Land Management Code* (Iron County Planning Commission, 1981) identifies the WSA as an open space zone, and the Iron County Commission has indicated they do not support wilderness designation for this WSA.

The WSA is managed under the proposed *CBGA RMP* (USDI, BLM, 1984c) which allows multiple uses as noted in the Description of the No Action Alternative.

Socioeconomics

DEMOGRAPHICS

Iron County is the local, social, and economic influence zone of the WSA.

Iron County is mostly rural with a total of 17,349 residents. Cedar City, the largest town, includes over 14,000 of the county's residents (U.S. Department of Commerce [USDC], Bureau of the Census, 1981).

EMPLOYMENT

The economy of Iron County is dominated by three employment sectors: retail trade, services and government. In Iron County government accounts for nearly 25 percent of the total employment. Employment and income figures for Iron County are presented in Table 4.

INCOME AND REVENUES

Economic-related activities in the WSA include livestock production, mineral leasing, and recreation. Table 5 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

TABLE 4
1980 Employment and Personal Income
Iron County, Utah

Industrial Sector	Iron County	
	Employment	Personal Income (\$1,000)
Total	6,726	75,163
Proprietors	1,078	9,178
Farm Proprietors	376	2,075
Nonfarm Proprietors	702	7,105
By Industry Source	-	-
Farm	230	3,422
Nonfarm	5,418	73,880
Private	3,750	53,569
Ag. Serv., For., Fish, and Other	25	343
Mining	157	4,370
Construction	290	5,515
Manufacturing	451	5,617
Nondurable Goods	231	2,633
Durable Goods	220	2,984
Transportation and		
Public Utilities	373	8,570
Wholesale Trade	164	2,106
Retail Trade	1,338	12,240
Finance, Insurance, and		
Real Estate	308	4,136
Services	644	10,672
Government and		
Government Enterprises	1,668	20,311
Federal, Civilian	304	5,937
Federal Military	126	388
State and Local	1,238	13,986

Source: USDC, Bureau of Economic Analysis, 1982

TABLE 5
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$12,750
Mineral Production	0	0
Livestock Grazing	\$660	\$46
Woodland Products	0	0
Recreational Use	Less than \$2,870	0
Total	Less than \$3,530	Up to \$12,796

Sources: BLM File Data, Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Four livestock operators have grazing privileges of 33 AUMs within the WSA. If all this forage were utilized, it would account for \$660 of livestock sales and \$165 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. These expen-

ditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Spring Creek Canyon WSA is estimated as about 700 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Iron County.

The WSA generates Federal revenues from mineral lease sources (refer to Table 6). Oil and gas leases in the WSA cover approximately 4,250 acres. At up to \$3 per acre, lease rental fees generate up to \$12,750 of Federal revenues annually. Half of these monies are allocated to the State which, in turn, reallocates these revenues to various funds, the majority of which are related to energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittee in the WSA can use up to 33 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$46 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this document.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.

4. The impacts of wilderness designation would result from: (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.

5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but is estimated to be low due to the WSA's rough terrain and limited resource potential. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and cause the following disturbance: oil and gas, 160 acres; and uranium, 20 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If uranium and oil and gas were developed, air quality could be reduced up to the PSD Class II limitations; however, the proximity of the WSA to Zion National Park may result in restriction of the development to meet PSD Class I limitations. Disturbance of 180 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because disturbances associated with uranium and oil and gas exploration and development activities would mainly be near the surface. This would not significantly affect geology.

SOILS

It is estimated that up to 180 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 180 acres would increase from 234 cubic yards/year to 486 cubic yards/year. Soil loss would decrease with reclamation. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 252 cubic yards (12 percent) over current annual soil loss. This apparently large increase is attributable to the small size of the WSA. The increase would be significant within the WSA but would not be significant in the context of the surrounding areas.

VEGETATION

The anticipated maximum of 180 acres disturbed would affect the WSA's vegetation because approximately 4 percent of the unit would be disturbed. The disturbance to the vegetation resource would not be significant when considering the large acreages of similar vegetation in the surrounding area.

WATER RESOURCES

Since precipitation is low and only a small portion of the Spring Creek and Kanarra Creek drainages would be impacted, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 252 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the proposed *CBGA RMP*.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells, and would not significantly reduce the quality or quantity of ground water in the WSA.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for up to 10 million barrels of oil in-place and up to 60 billion cubic feet of natural gas exists within the WSA and surrounding area. These oil and gas resources could be explored and developed, subject to Category 2 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if explora-

tion and development were to occur. However, due to the small size of these deposits, no development is expected.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposits of up to 500 tons of uranium oxide could be developed. Approximately 20 acres could be disturbed due to exploration and development of this mineral resource. However, the likelihood of development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the disturbance of an estimated 180 acres (about 4 percent of the WSA) by mineral and energy development and exploration. Deer, mountain lion, and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Less mobile wildlife would either perish or coexist with these disturbances at smaller population levels.

An active peregrine falcon (endangered) nest is found within the WSA and bald and golden eagles are thought to use the WSA. Before authorizing surface-disturbing activities (180 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed areas and informally consult with the Fish and Wildlife Service (FWS). If threatened or endangered species could be affected, BLM would initiate formal Section 7 consultation with the FWS under provisions of the Endangered Species Act, as required by BLM policy (refer to Appendix 4). Appropriate mitigating measures would be taken to protect these species. Because necessary measures would be taken, it can be reasonably concluded that the viability of populations of the threatened or endangered species would be preserved.

FOREST RESOURCES

Since the forest resources are not utilized (except by occasional campers or hikers) and have no commercial value, no significant harvest or loss of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the proposed *CBGA RMP*. The 33 AUMs currently allocated in the WSA are controlled by four livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values.

VISUAL RESOURCES

Visual values in areas affected by the estimated 180 acres of surface disturbance from mineral and energy exploration and development would be degraded, and VRM Class II management objectives would not be met. If up to 4 percent of the WSA were disturbed, visual values in the unit, as a whole, would be degraded. Even after rehabilitation, some permanent localized degradation would be expected. However, when considering the surrounding area, 180 acres of disturbance would not appreciably reduce the visual quality of the surrounding vicinity. However, the potential for mineral development is low.

CULTURAL RESOURCES

Disturbance of 180 acres by mineral exploration and development under this alternative could affect cultural resources. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts.

Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown; however, based on the experience of BLM district archaeologists, it is expected to be minimal. Vandalism could be a problem and would increase in proportion to the general population increase.

RECREATION

If 180 acres were disturbed by mineral and energy activities, primitive recreational opportunities could be diminished in the WSA as a whole. The potential for mineral development is low. The future increase in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 700 current visitor days per year to 1,040 visitor days at the end of 20 years. Overflow from Zion National Park could further increase use.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the proposed *CBGA RMP*. Potential mineral and energy exploration and development could disturb an estimated 180 acres. Wilderness values in the WSA (i.e., naturalness on all 4,433 acres, 3,728 acres of outstanding opportunities for solitude, 3,568 acres of primitive recreation, and special features) would

would be lost or diminished in affected areas. However, the impacts to these values probably would not be significant due to the low probability of surface disturbance and reclamation practices.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Iron County Land Management Code* which recommends "open spaces" and with Iron County Commission policy. This alternative would allow for a water pipeline in Spring Creek as proposed by Kanarrville to obtain culinary water.

In Zion National Park, the area adjoining this WSA has been proposed as wilderness. This alternative would not complement the NPS proposal. Surface disturbance allowed with this alternative would conflict with the Secretary of the Interior's recommendation to transfer 1,607 acres of the WSA to the NPS.

This alternative is based on implementation of the proposed *CBGA RMP* and would, therefore, be in conformance with it.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the uranium, oil, and gas in the WSA were developed it would not lead to a significant increase in employment and income for Iron County. However, the probability of economic development of minerals within the WSA is low.

There would be no livestock-related economic losses because the existing grazing use (33 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$660 annually in livestock sales and \$165 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is projected to increase only 340 visitor days per year in the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 183 acres in the WSA open to lease that are currently unleased. If

leased they would bring up to 549 additional Federal lease fee revenues per year in addition to any royalties from production. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$46 per year) would continue.

All Wilderness Alternative (4,433 Acres) (Proposed Action)

As noted in the Description of the Alternatives section, the major changes that could occur in the 4,433-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). The WSA would be closed to vehicular use except for approvals by BLM as noted in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that mining claims would be located before designation and would eventually be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates for the WSA.)

Because potentially disturbed areas would be smaller than under the No Action Alternative (20 vs. 180 acres), the impacts from development and surface disturbance on air quality, geology, vegetation, water, and forest resources would be insignificant for this alternative. Wilderness protection would provide additional protection to these resources as compared to the No Action Alternative.

SOILS

The soil resource could benefit from the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities.

Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 20 disturbed acres (.5 percent of the WSA) would increase one class, from 26 cubic yards/year to 54 cubic yards/year. However, soil loss would decrease as reclamation occurred. The time for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual increase in soil loss from surface disturbance in the WSA would be approximately 28 cubic yards, which is 224 cubic yards less than with the No Action Alternative.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Approximately 4,250 acres are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA, and none is expected. Therefore, existing leases would expire and would not be renewed.

Exploration for and development of a potential resource of up to 10 million barrels of in-place oil and less than 60 billion cubic feet of natural gas with 3 million barrels of oil and 18 billion cubic feet of natural gas that is recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of recoverable oil and gas resource.

Locatable Minerals

There are presently no mining claims in the WSA. Up to 500 tons of recoverable uranium oxide could occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 20 acres could be disturbed due to exploration and development of locatable mineral resources. The worst-case impact to minerals would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of up to 500 tons of uranium oxide would be foregone.

Because production of this metal is not currently occurring and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development would occur even with the No Action Alternative. Therefore, wilderness designation would not result in any significant loss of potentially recoverable uranium resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude and the possibility that fewer acres would be disturbed. The disturbance of 20 acres (.5 percent of the WSA) from exploration and development of locatable mineral resources would disrupt wildlife populations on the affected areas but would not result in these species leaving the WSA. Appropriate measures would be taken to protect threatened, endangered, and sensitive species as described for

the No Action Alternative. These species would benefit from decreased disturbance and preservation of solitude in the WSA.

LIVESTOCK

Present domestic livestock grazing would be as authorized in the proposed *CBGA RMP*. The 33 AUMs currently allocated in the WSA are controlled by four livestock permittees. Since no use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values.

VISUAL RESOURCES

Visual resources in the WSA would be protected from disturbance because the VRM class would change from Class II to the more restrictive Class I. That class generally allows only natural ecological changes and, therefore, would reduce the potential for surface disturbances. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. However, if only .5 percent of the area were disturbed, no significant loss of visual quality in the area as a whole would be expected.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 700 visitor days a year) the WSA has outstanding scenic values. If designated, those high quality values would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that

would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use.

Mineral-related surface disturbance on up to 20 acres could cause localized impairment of values.

Little, if any, impact on ORV recreational use would be expected due to the lack of such activity in the area.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values. Recreation opportunities in Zion National Park would also be protected and enhanced by complementary management in this WSA.

WILDERNESS VALUES

Designation and management of all 4,433 acres as wilderness would assure the preservation of the wilderness values of naturalness and outstanding opportunities for solitude (3,728 acres) and primitive and unconfined recreation (3,568 acres). Designation could also complement these values within Zion National Park. The scenic special feature in this WSA would also be protected and preserved.

Opportunities for primitive recreation, solitude, and special features could be degraded in localized areas where an estimated 20 acres of surface disturbance could result from allowable mineral exploration and development activities. This small disturbance probably would not have long-term effects on primitive recreation values and special features.

Designation of this WSA as wilderness would benefit the values and uses of the contiguous NPS wilderness proposal. Spring Creek Canyon could provide extensions of the hiking opportunities in Zion National Park.

Thus, it is concluded that designation and management of all 4,433 acres of the Spring Creek Canyon WSA as wilderness would protect and preserve the WSA's wilderness values and the scenic special feature, except in localized areas affected by the surface disturbance related to mineral exploration.

LAND USE PLANS AND CONTROLS

The area adjoining this WSA in Zion National Park has been proposed as wilderness. This alternative

could complement the NPS proposal. Wilderness designation would not conflict with the Secretary's recommendation to transfer 1,007 acres to the NPS.

The proposed BLM *CBGA RMP* does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to this plan.

The *Iron County Land Management Code* and county policy recommend multiple use of public lands in the county. This alternative would not totally conflict with the multiple-use concept since many resource uses would continue, although under more restrictive conditions. However, this alternative would conflict with the county's multiple-use concept because restrictive conditions would be placed on mineral development and oil and gas leases would not be reissued. Kanarraville would not be able to pipe water from Spring Creek inside the WSA.

SOCIOECONOMICS

Overall, there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 5) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low. Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$660 of livestock sales and \$165 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would not be significant to the local economy.

The loss of 4,250 acres now leased would cause an eventual loss of up to \$12,750 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$549 annually in Federal revenues from the 183 acres that could be leased without designation. In addition to these rental fees, any potential royalties from lease production could also be foregone.

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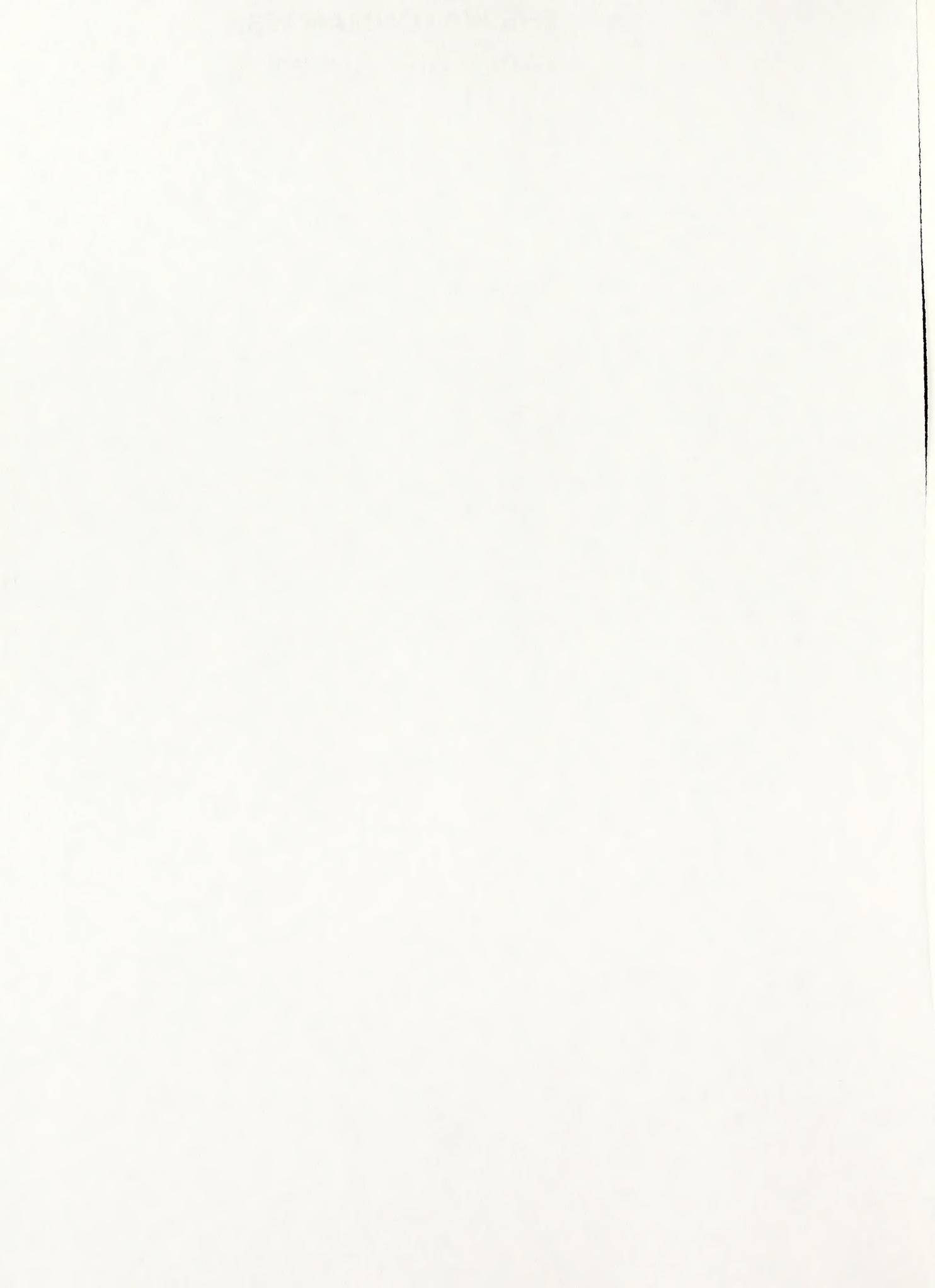
The Watchman
WSA



THE WATCHMAN WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative	4
Summary of Environmental Consequences	7
AFFECTED ENVIRONMENT	7
Air Quality	7
Geology	7
Soils	7
Vegetation	8
Water Resources	8
Mineral and Energy Resources	8
Wildlife	9
Forest Resources	10
Livestock and Wild Horses/Burros	10
Visual Resources	10
Cultural Resources	10
Recreation	10
Wilderness Values	10
Land Use Plans and Controls	11
Socioeconomics	11
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	12
BIBLIOGRAPHY	15



THE WATCHMAN WSA (UT-040-149)

INTRODUCTION

General Description of the Area

The Watchman Wilderness Study Area (WSA) is located along the boundary of Zion National Park in Washington County. It is contiguous with a National Park Service (NPS) administratively endorsed wilderness proposal encompassing 120,620 acres. The WSA is less than 1 mile east of Springdale and is administered by the BLM, Cedar City District. The unit contains 600 acres and adjoins the Park for approximately 1.50 miles along the east side of the WSA.

The area's topography is dominated by Johnson and Watchman Mountains and the East and North Forks of the Virgin River. The unit is located on a talus slope between the two river drainages and the mountains. Elevations vary from 3,700 to 5,200 feet above sea level.

Average annual precipitation is approximately 15 inches. Approximately half of the precipitation falls from December through March, in the form of snow. Intense thunderstorms from the southwest are common during the summer months.

Temperatures vary greatly with aspect and altitude, but are generally mild. July and January are the warmest and coldest months, respectively. July temperatures range from extremes of 0 degrees Fahrenheit (F) to 105 degrees F. There are no private, State, or split estate lands located within the unit.

This WSA was dropped from wilderness study status by the Secretary of the Interior on December 30, 1982 due to its small size. As a result of a decision of the Eastern District Court of California (*Sierra Club v. Watt*, No. Civil 5-83-035 LRK, dated April 18, 1985) it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA); and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres, if they are adjacent to land with wilderness potential administered by other Federal agencies.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I. Public opportunity to review and comment on an initial draft analysis of this area occurred in August 1982. Because of the 1982 decision of the Secretary of the Interior, the

area was not among those listed in the brochure used for the 1984 EIS scoping meetings (USDI, BLM, 1984), but the specific issues and concerns expressed earlier apply and are as follows:

1. *Comment:* Based on size, this area does not qualify for further consideration as a wilderness area. All other normal considerations mandated as a part of the EIS must be adequately treated to the satisfaction of the Commission.

Response: This WSA is adjacent to a proposed wilderness area in Zion National Park. BLM has authority under Section 202 of FLPMA to study units of less than 5,000 acres.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal land use plans?

Response: Consistency with land use plans is discussed in the Land Use Plans and Controls sections of this document. Management following wilderness designation of this unit would be consistent with management of the proposed wilderness area in Zion National Park.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

The Watchman WSA is only 600 acres: a partial wilderness alternative is not analyzed because it would not be viable nor would it resolve any resource conflicts.

Transfer of several WSAs, including The Watchman WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA.



THE WATCHMAN WSA

However, because BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness and because the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM "Wilderness Study Policy" (USDI, BLM, 1982b) requires the BLM in its Wilderness Study Report to determine: (1) whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency that administers the contiguous wilderness area.

BLM has determined that The Watchman WSA would not be a viable independent wilderness if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report, but it will be based primarily on factors affecting both BLM and NPS jurisdictions, such as relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items. Environmental differences, if any, would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation, and, therefore, are not relevant to the analyses of the impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (600 acres). A description of each alternative follows. Where management intentions have not been clearly

identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 600-acre The Watchman WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Virgin River Management Framework Plan (MFP) (USDI, BLM, 1979b). No State lands lie within the WSA (refer to Map 1).

The following are specific actions that would take place under this alternative:

- All 600 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed in future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing and future oil and gas leases could be developed under standard stipulations (Category 1) on 480 acres and no surface occupancy stipulations (Category 3) on 120 acres. There are presently two leases (600 acres) in the WSA.
- The present domestic livestock grazing use of 12 Animal Unit Months (AUMs) would continue as authorized in the Virgin River MFP and *Hot Desert Grazing Management Environmental Impact Statement* (USDI, BLM, 1978b). There are no existing range developments in the WSA. New rangeland developments (none are planned) could be implemented without wilderness considerations.
- Developments for wildlife, water resources, etc. (none are planned) would be allowed without concern for wilderness values if in conformance with the current BLM land use plan.
- The WSA would be open to vehicular use and new access routes would be allowed.
- The entire 600-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (600 acres).
- Measures to control fire, insects, noxious

THE WATCHMAN WSA

Map 1 LAND STATUS The Watchman WSA UT-040-149

Legend

-  WSA Boundary
-  Zion National Park Boundary
-  National Park Service Administered Land
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA

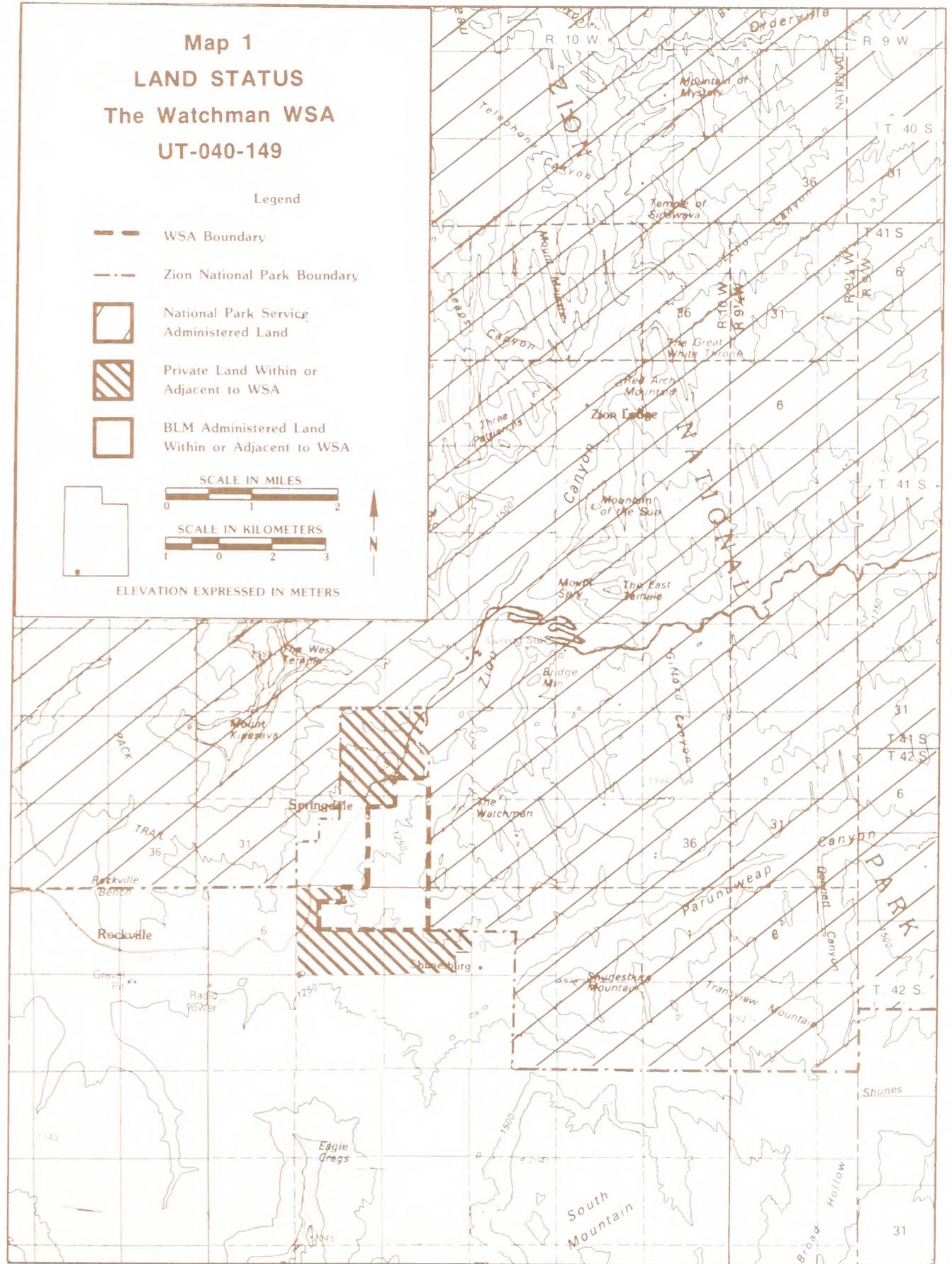
SCALE IN MILES



SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.

- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 600 acres of The Watchman WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA lies adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, The Watchman WSA could be retained by BLM or transferred to the NPS along with nine other small WSAs (refer to Map 3), who would then assume management responsibilities. For the purposes of this analysis, it is assumed that BLM would retain management of The Watchman WSA, and it would be managed in part with the contiguous NPS wilderness in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981) to preserve its wilderness character. No State lands are located in the WSA. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 600 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims have been located in the WSA. Existing oil and gas leases involving approximately 600 acres would not be reissued upon expiration unless a find of oil or gas in commercial quantities is shown.

- Present domestic livestock grazing would be allowed to continue as authorized in the Virgin River MFP and *Hot Desert Grazing Management EIS*. The 12 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness resource protection and management. There are currently no rangeland developments in the WSA, and none are planned.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in The Watchman WSA, and none are currently planned.
- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 600-acre area would be closed to off-road vehicle (ORV) use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. There are no roads along the boundary of the WSA.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 600-acre wilderness.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.

THE WATCHMAN WSA

Map 2 ALL WILDERNESS ALTERNATIVE The Watchman WSA UT-040-149

Legend

-  All Wilderness Alternative (600 acres)
-  Zion National Park Boundary

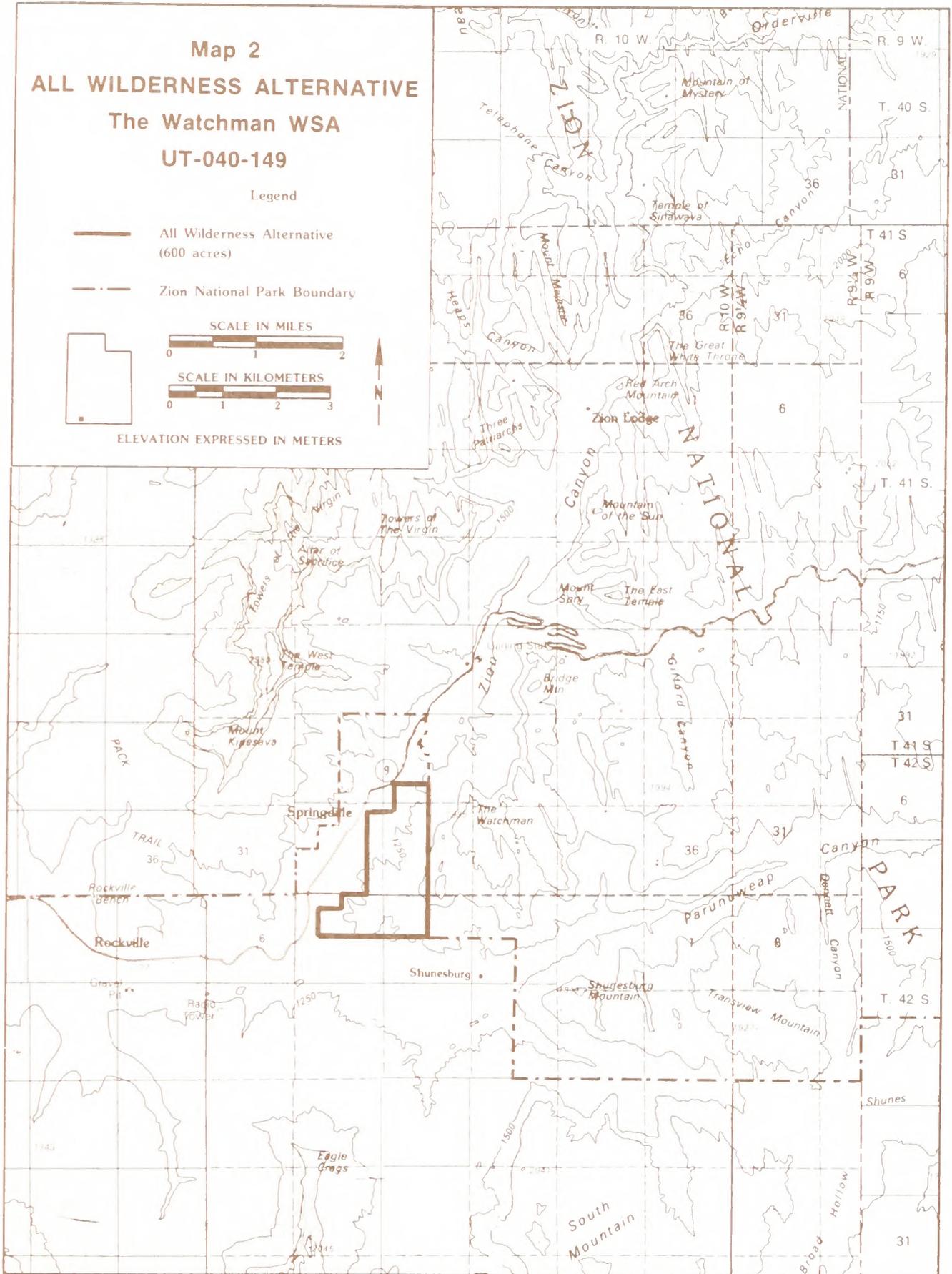
SCALE IN MILES



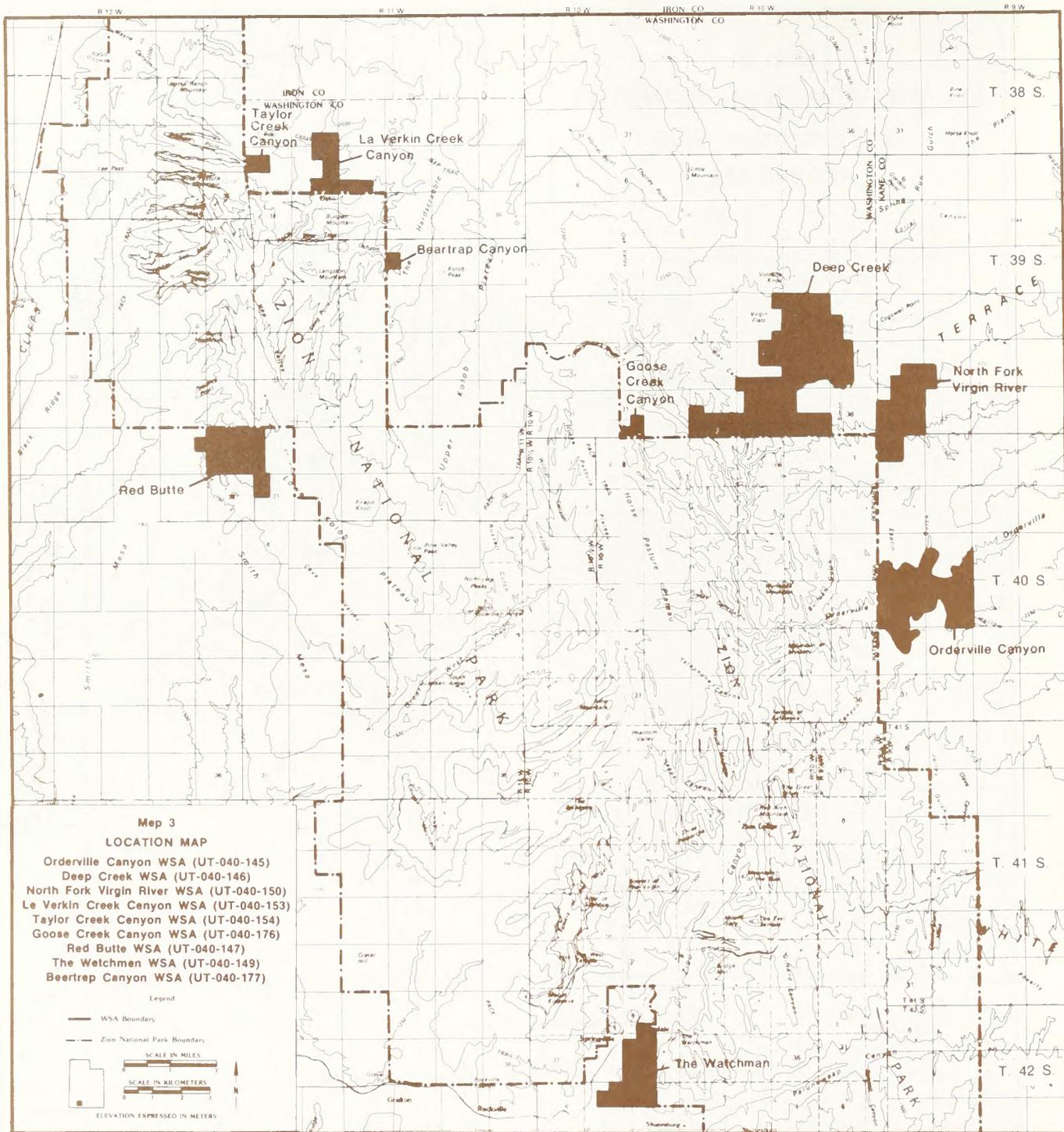
SCALE IN KILOMETERS



ELEVATION EXPRESSED IN METERS



THE WATCHMAN WSA



THE WATCHMAN WSA

- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

No applicable environmental impacts would result from the No Action or All Wilderness Alternatives.

AFFECTED ENVIRONMENT

Air Quality

Air quality data for the WSA were obtained from the automated visibility measuring station at Lava

Point in Zion National Park. This station scans across the area of the WSA, focusing on the Kaibab Plateau in Arizona. The preliminary figures from this relatively new system give an average visibility of 155 miles. This indicates extremely clean air in the area. The area is presently classified as Class II air under the Prevention of Significant Deterioration (PSD) regulations. This means that air quality deterioration that accompanies moderate well-controlled growth would not be considered significant. Zion National Park contiguous to the WSA has a PSD Class I designation under existing regulations.

Geology

The Watchman WSA lies within the Grand Staircase Section of the Colorado Plateau Physiographic Province. The WSA consists essentially of the foothills and lower slopes of Johnson Mountain and The Watchman.

Elevations range from approximately 3,800 feet above sea level along the East Fork Virgin River in the southwest corner of the WSA to a little more than 5,200 feet above sea level on the west slope of Johnson Mountain. Drainage is north, south, and west into the North Fork Virgin River and the East Fork Virgin River.

Rocks of the Triassic age, totaling about 1,400 feet, and minor amounts of Quaternary deposits, crop out in the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 10,000 feet thick (Hintze, 1973). Sandstones and strata of the Triassic Moenave and Chinle Formations form the most extensive outcrops in the WSA. The Quaternary deposits occur in the extreme northern and southern portions of the WSA. No faults or other structures are known to occur in the WSA.

Soils

Most of the soils are mapped by the *Washington County Soil Survey* (U.S. Department of Agriculture, Soil Conservation Service, 1977) as Paunsaugunt-Kolob-Dalcan association or rock outcrop-rockland association. These are excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is moderate to severe. These soils are used for range, wildlife, and recreation and are unsuitable for agriculture. Erosion condition was determined by using soil surface factors, as summarized in Table 1 (terms are defined in the Glossary).

TABLE 1
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	400	66	520
Slight	0.6	200	34	120
Stable	0.3	0	0	0
Total		600	100	640

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

The Watchman WSA is found in a transition zone between the hot desert and the cold desert. The existing vegetation is primarily characterized as desert shrub with plants adapted to the "hot desert" climate. Many of these plants have woody stems, deep or long roots, and extremely small or spiny leaves. The majority of the vegetation is shrub, with such plants as creosote bush, blackbrush, and saltbush dominating the landscape. A few pinyon-juniper trees are scattered across the unit. Less than 15 percent of the vegetation is herbaceous, with Indian ricegrass, galleta grass, eriogonum, and penstemon being the more dominant herbaceous plants. This zone has an overstory canopy of 10 to 20 percent, resulting in a scrubby landscape with much exposed rock. No threatened, endangered, or sensitive plant species are known to occur in the WSA.

The Watchman WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. There are no existing water rights and the area is presently closed to further applications, although the Utah State Water Engineer has stated some applications could be considered depending on water use and location. There are no withdrawals

present in the unit. No perennial surface water occurs within the WSA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 1- was assigned to The Watchman WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA. The low OIR is based on the area's low potential for having economic deposits of minerals.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

Table 2 provides an energy and mineral resource rating summary for the WSA.

LEASABLE MINERALS

Oil and Gas

The oil and gas capabilities of the region have been reviewed by SAI (1982). There is no evidence

TABLE 2
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic ft. of gas
Uranium	f2	c2	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f2	c1	Low temperature
Hydroelectric	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

indicating the existence of commercially recoverable oil and gas resources within the WSA.

The Watchman WSA is approximately 10 miles east of the Virgin Field. Production from this field has been low (201,127 barrels). The Virgin Field has produced small amounts of oil intermittently since 1907; costs have generally exceeded profits.

Based on the geologic similarity between this field and the WSA, SAI considered the oil and gas favorability of the tract to be low (f2)—less than 10 million barrels of oil and 60 billion cubic feet of natural gas in-place.

Under the current land use plan, 120 acres are closed to surface occupancy and 480 acres are open to leasing with standard stipulations. There are two oil and gas leases in the WSA; both are post-FLPMA. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Coal

There are no known coal-bearing rocks within the WSA.

Geothermal

No geothermal resources are known to occur within or near the WSA. According to SAI (1982) the geothermal favorability of the WSA is low with a potential only for low-temperature geothermal resources.

Hydroelectric

The WSA has no potential for hydroelectric power generation.

LOCATABLE MINERALS

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA. No claims have been located within the WSA.

Uranium

No known deposits of uranium exist in the WSA. The WSA is approximately 22 miles east of Silver Reef Mining District, a known uranium-producing area. Uranium has been found in the Springdale Sandstone Member of the Moenave Formation. The Moenave Formation crops out in a wide belt throughout the WSA. SAI (1982) speculates the WSA has a low certainty for occurrence of uranium. It is estimated the WSA has less than 500 tons of uranium oxide.

Wildlife

The WSA supports a variety of animal species. There are approximately 300 vertebrate animal species that could inhabit the WSA. These include 60 mammal species, 208 bird species, 20 reptile species, 6 amphibian species, and 3 fish species (USDI, BLM, 1979a).

Raptors may include golden eagle, bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common. The bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage adjacent to the WSA and also in Kanarrville and New Harmony Valleys northwest of the WSA. No other threatened or endangered species are known to

THE WATCHMAN WSA

occur within the WSA. The golden eagle is a sensitive species that may inhabit the WSA.

An active peregrine falcon nest occurs in Zion National Park. Peregrine falcons have been reported in the Deep Creek-Goose Creek area and in Taylor Creek Canyon, but nesting is not confirmed.

Big game animals include mule deer and mountain lion. The WSA is within the boundaries of Deer Herd Unit 58 providing winter forage. No critical range is found within the WSA. Hunting pressure is light because access is blocked by private and NPS lands. There are no existing or proposed improvements for wildlife for this area.

In 1977, desert bighorn sheep were released in Zion National Park adjacent to The Watchman WSA. Since the release, desert bighorn sheep have used the area for summer feeding and as a route to Parunuweap Canyon.

Forest Resources

The only forest resources found in the WSA consist of scattered pinyon-juniper. The WSA has almost no forest resources suitable for firewood, posts, pine nuts, and Christmas tree cutting.

Livestock and Wild Horses/Burros

The Watchman WSA contains part of one custodial allotment (Park Allotment). There are 12 AUMs within the WSA. One permittee is allowed to graze cattle on this allotment. There are no existing or proposed range improvements in the WSA.

No wild horses or burros inhabit the WSA.

Visual Resources

Under the VRM system, the entire WSA is rated Class II. (Refer to Appendix 7 for an explanation of BLM's VRM rating system.)

The scenery quality rating for The Watchman WSA is Class A. This designation indicates outstanding or dominating features. The unit shares the same features as Zion National Park, one of the nation's most important tourist attractions.

Cultural Resources

No sampling inventory for archaeological and other cultural resources has been conducted in the WSA. There are no known sites.

Recreation

Recreational use of The Watchman WSA is very limited. It is isolated from Zion National Park by rough terrain around Johnson and Watchman Mountains. Most recreational use would be associated with The Watchman Campground inside the Park. Visitors walk down the river and cross into the WSA. It is estimated that there are less than 100 visitor days annually. There are no developed recreation facilities in the WSA.

Wilderness Values

SIZE

The Watchman WSA is approximately 1.50 miles long (north to south), 1 mile wide (east to west), and encompasses 600 acres. The unit is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous proposed wilderness in Zion National Park. If managed in part with the contiguous NPS unit the WSA would be a viable wilderness area.

NATURALNESS

The unit has primarily been affected by the forces of nature. A transmitter site has been installed at the base of Johnston Mountain in the WSA. There is almost no surface disturbance because this transmitter was installed and is maintained by helicopter.

SOLITUDE

Opportunities for solitude are found in the WSA because of topographic screening. The unit contains the lower slopes and rugged foothills below Johnston Mountain and The Watchman. The area is only sparsely vegetated, but the rough topography provides outstanding opportunities for solitude on about 450 of the 600 acres.

PRIMITIVE AND UNCONFINED RECREATION

The Watchman WSA could offer outstanding opportunities for hiking and exploring. These activities are enhanced by the adjacent Zion National Park. Rock climbing and geologic study are possible outstanding recreation opportunities. Outstanding opportunities for primitive, unconfined recreation are found on approximately 450 of the 600 acres.

SPECIAL FEATURES

No special features have been identified for this WSA.

Land Use Plans and Controls

The Federal Government has surface and sub-surface ownership of all 600 acres of public land within the WSA boundary. There are no private or State in-holdings or valid existing rights, except for post-FLPMA oil and gas leases associated with this WSA. The BLM is managing the lands through general guidance of the Virgin River MFP as discussed in the Description of the No Action Alternative.

In 1984 the House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214 (1984), a bill designed to transfer jurisdiction of certain lands, including The Watchman WSA, from the BLM to the NPS. In response to the hearing, the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984a and 1984b). The NPS found that The Watchman WSA contains significant recreational values that provide an important supplement to those within the Zion National Park boundary. In a February 6, 1985 letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, The Watchman WSA was recommended as suitable for inclusion into the adjacent unit of the National Park System. No Congressional action has been taken on that recommendation.

The *Washington County Master Plan* (Planning and Research Associates, 1971) identifies the WSA as an open space zone, and Washington County does not support wilderness designation for this WSA.

Socioeconomics

Kane and Washington Counties are the local, social, and economic influence zones of the WSA.

DEMOGRAPHICS

Kane County is rural, with a total of 4,024 residents and an average population density of approximately one person per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Washington County is also basically a rural county except for the population centers near the City of St. George. The total population of Washington County is 26,065, for an average population density of 10.8 persons per square mile.

EMPLOYMENT

The economies of both Kane and Washington Counties are dominated, in terms of employment, by three sectors: retail trade, services, and gov-

ernment. In Kane County both retail trade and government account for 17 percent of the total employment, and the services sector provides 14 percent. In Washington County the retail trade sector provides 21 percent, government 19 percent, and services 11 percent of the total employment. Employment and income figures for the two counties, are presented in Table 3.

INCOME AND REVENUES

Economic-related activities in the WSA include livestock production and recreation. Table 4 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 4
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$1,800
Mineral Production	0	0
Mining Claim Assessment	0	0
Livestock Grazing	\$240	\$17
Woodland Products	0	0
Recreational Use	Less than \$420	0
Total	Less than \$660	Up to \$1,817

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

One livestock operator has a grazing privilege of 12 AUMs within the WSA. If all this forage were utilized, it would account for \$240 of livestock sales and \$60 of ranchers' returns to labor and investment.

Nonmotorized recreational use is low, and related local expenditures are well distributed. These expenditures are insignificant to both the local economy and individual businesses. The WSA's motorized recreational use is very low and insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately

TABLE 3
1980 Employment and Personal Income
Kane and Washington Counties, Utah

Industrial Sector	Kane County		Washington County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	1,452	12,595	7,866	84,499
Proprietors	382	2,623	1,469	14,010
Farm Proprietors	122	136	343	2,386
Nonfarm Proprietors	260	2,487	1,126	11,624
By Industry Source	-	-	-	-
Farm	27	382	98	3,031
Nonfarm	1,043	12,213	6,299	80,418
Private	798	9,614	4,805	63,399
Ag. Serv., For., Fish, and Other	(L)	0	29	724
Mining	17	196	70	1,347
Construction	51	1,544	537	9,425
Manufacturing	70	566	698	9,759
Nondurable Goods	(D)	(D)	441	5,986
Durable Goods	(D)	(D)	257	3,773
Transportation and Public Utilities	150	1,875	236	4,996
Wholesale Trade	12	230	263	3,963
Retail Trade	252	2,364	1,673	14,741
Finance, Insurance, and Real Estate	39	392	424	5,201
Services	202	2,427	875	13,243
Government and Government Enterprises	245	2,599	1,494	17,019
Federal, Civilian	18	252	193	2,725
Federal, Military	30	78	161	425
State and Local	197	2,269	1,140	13,869

Source: USDI, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

\$4.10. The recreational use for The Watchman WSA is estimated as about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Kane and Washington Counties.

The WSA generates Federal revenues from mineral leases and livestock sources (refer to Table 4). Mineral leases in the WSA cover approximately 600 acres. At up to \$3 per acre, lease rental fees generate up to \$1,800 of Federal revenues annually. Half of these monies are allocated to the State, which in turn reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

The livestock permittee in the WSA can use up to 12 AUMs per year. Based on a \$1.40 per AUM

grazing fee, the WSA can potentially generate \$17 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

The Watchman WSA is located on a talus slope of Johnston and Watchman Mountains. The terrain is very steep, rough, and broken. The WSA encompasses only 600 acres. The potential for use of the WSA is practically nonexistent because of its site characteristics and its extremely low mineral

THE WATCHMAN WSA

potential (OIR of 1[SAI, 1982]). No change in use of the WSA's environment is foreseen in either the No Action or All Wilderness Alternative. There-

fore, no environmental impacts would result from wilderness designation or nondesignation.

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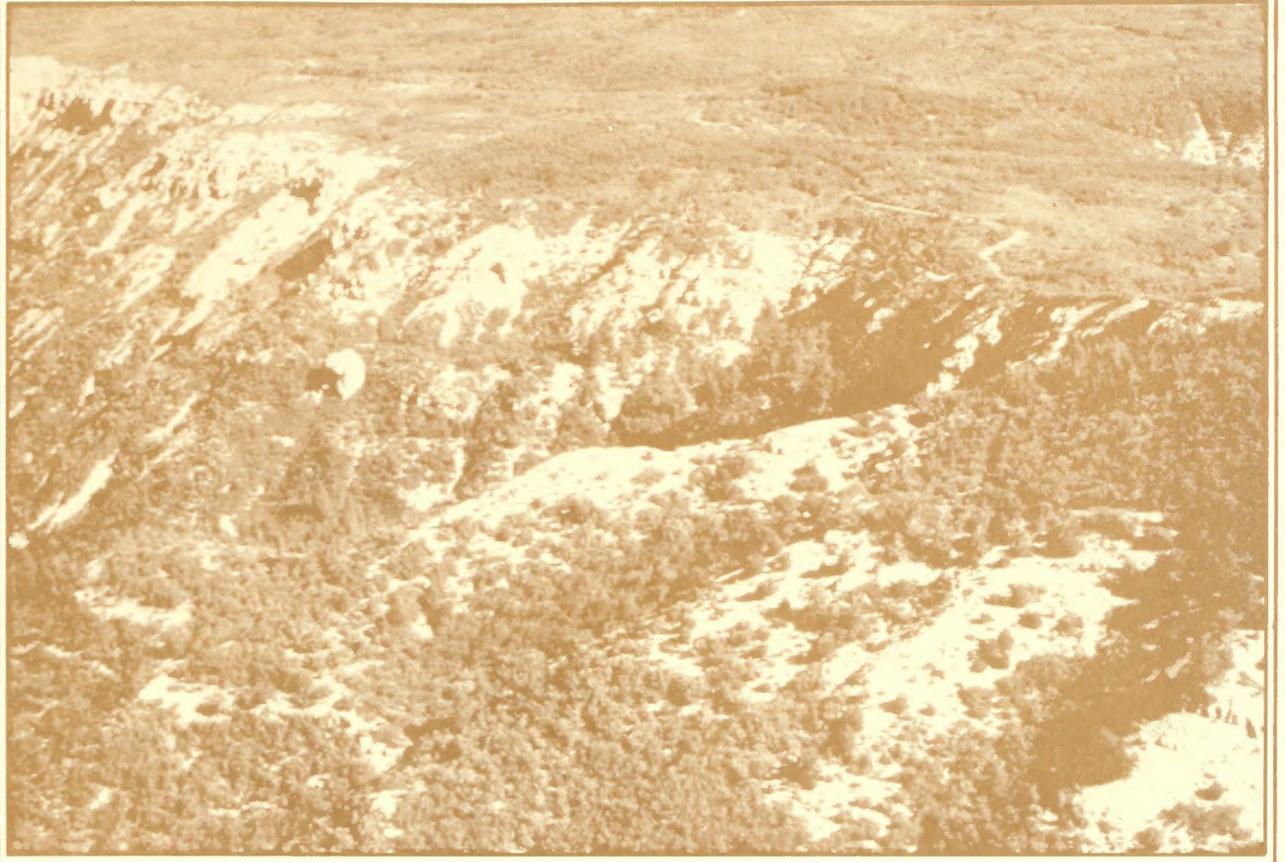
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Taylor Creek Canyon WSA



TAYLOR CREEK CANYON WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative (Proposed Action)	4
Summary of Environmental Consequences	7
AFFECTED ENVIRONMENT	7
Air Quality	7
Geology	7
Soils	7
Vegetation	8
Water Resources	8
Mineral and Energy Resources	8
Wildlife	9
Forest Resources	9
Livestock and Wild Horses/Burros	9
Visual Resources	9
Cultural Resources	9
Recreation	10
Wilderness Values	10
Land Use Plans and Controls	10
Socioeconomics	11
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	12
BIBLIOGRAPHY	13

TAYLOR CREEK CANYON WSA (UT-040-154)

INTRODUCTION

General Description of the Area

Taylor Creek lies along the boundary of Zion National Park in the northeast corner of Washington County. It is contiguous with a National Park Service (NPS) administratively endorsed wilderness proposal encompassing 120,620 acres. Taylor Creek Canyon Wilderness Study Area (WSA) contains 35 acres. It is administered by the BLM's Cedar City District.

The WSA's topography is dominated by the Middle Fork of Taylor Creek. The canyon rim is 1,000 feet above the creek bottom exposing various rock formations. The climate within the WSA is considered mild with average temperatures ranging from the low 40s during the winter months to the high 80s during mid-summer. Temperature extremes can vary from 0 to 105 degrees Fahrenheit (F). Average annual precipitation in Zion National Park is 14.5 inches with about half occurring in the form of winter snow and half during summer thunderstorms. Winds usually prevail from the southwest with the strongest winds occurring in March and April.

There are no private or State lands located within the WSA.

This WSA was dropped from wilderness study status by the U.S. Secretary of the Interior on December 30, 1982 due to its small size. As a result of a decision of the Eastern District Court of California (*Sierra Club v. Watt*, No. Civil 5-83-035 LRK, dated April 18, 1985) it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA); and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres if they are adjacent to land with wilderness potential administered by other Federal agencies.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I. Public opportunity to review and comment on an initial draft analysis of this area occurred in August 1982. Because of the 1982 decision of the Secretary, the area was not among those listed in the brochure used for the 1984 EIS scoping meetings (USDI, BLM, 1984a);

however, the specific issues and concerns expressed earlier apply and are as follows:

1. *Comment:* Based on size, this area does not qualify for further consideration as a wilderness area. All other normal considerations mandated as a part of the EIS must be adequately treated to the satisfaction of the Commission.

Response: This WSA is adjacent to a proposed wilderness area in Zion National Park. BLM has authority under Section 202 of FLPMA to study units of less than 5,000 acres.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal land use plans?

Response: Consistency with land use plans is discussed in the Land Use Plans and Controls sections of this document. Management following wilderness designation of this unit would be consistent with management of the proposed wilderness area in Zion National Park.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Due to the small size of the WSA and the lack of resource conflicts with wilderness designation, no partial wilderness alternatives were considered.

Transfer of several WSAs, including the Taylor Creek Canyon WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, because BLM could continue to manage



TAYLOR CREEK CANYON WSA

the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness and because the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits, and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM "Wilderness Study Policy" (USDI, BLM, 1982b) requires the BLM in its Wilderness Study Report to determine whether (1) the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency administering the contiguous wilderness area.

BLM has determined that the Taylor Creek Canyon WSA would not be a viable independent wilderness if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions (i.e., relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items). Environmental differences if any, would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation, and therefore are not relevant to the analyses of impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (35 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on man-

agement projections under each alternative. These assumptions are indicated in each case.

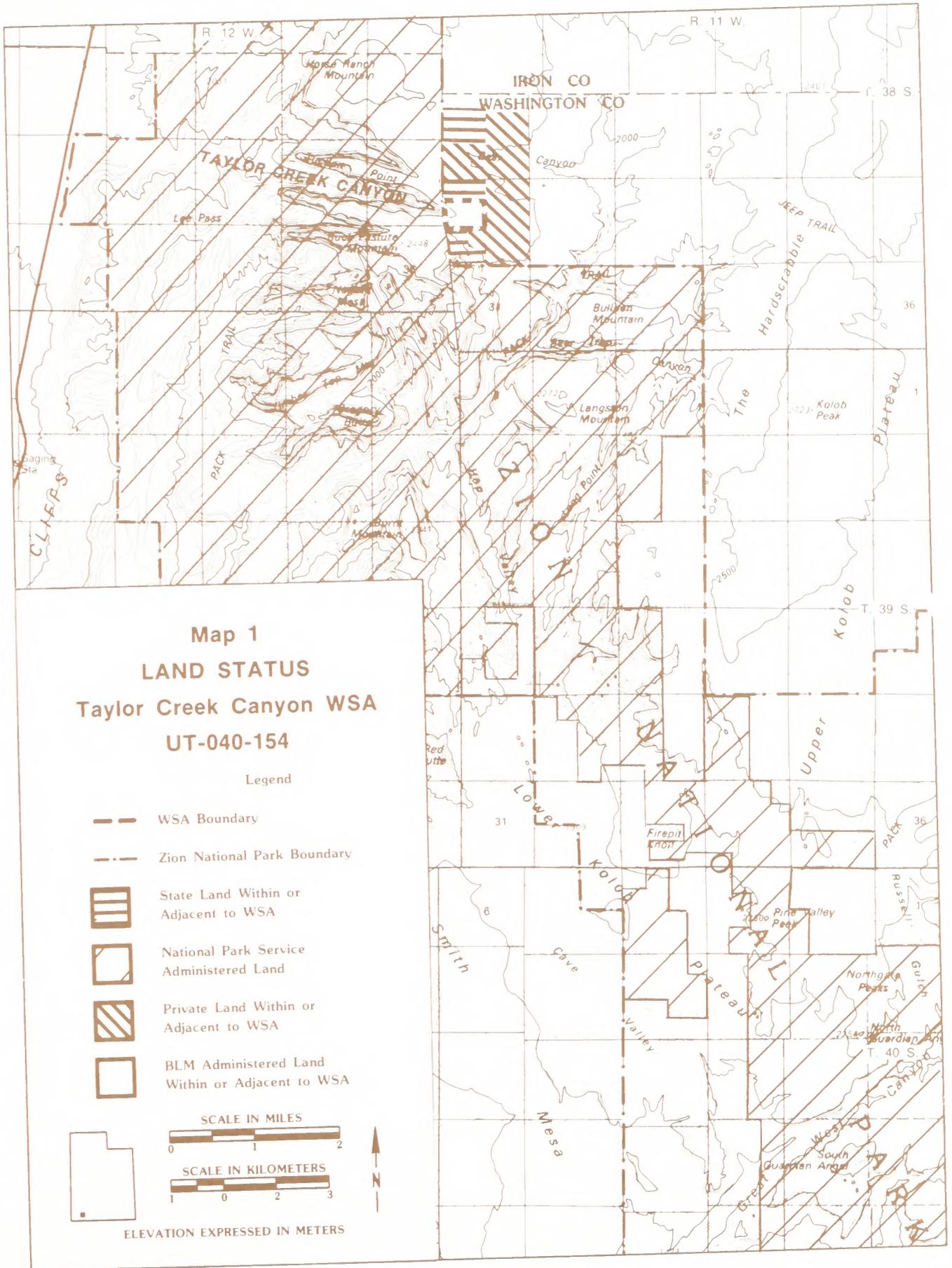
NO ACTION ALTERNATIVE

With this alternative, none of the 35-acre Taylor Creek Canyon WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Virgin River Planning Unit Management Framework Plan (MFP) (USDI, BLM 1979b). No private, State or split estate lands lie within or near the WSA (refer to Map 1).

The following are specific actions that would take place under this alternative:

- All 35 acres would remain open to mineral location, leasing, and sale. There are no mining claims in the WSA at the present time. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing and future oil and gas leases could be developed under standard stipulations (Category 1) on the 35-acre area.
- The WSA is part of a grazing allotment but, due to the steep terrain, no grazing occurs on the WSA. There are no existing range developments in the WSA. New rangeland developments could be implemented without wilderness considerations. No developments are currently planned.
- Developments for wildlife, water resources, etc. would be allowed without concern for wilderness values if in conformance with the current BLM land use plan. None of these developments are currently planned.
- The entire WSA acreage would be open to vehicular use and new access routes would be allowed.
- The entire 35-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The entire area would continue to be managed under Visual Resource Management (VRM) Class II.
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.

TAYLOR CREEK CANYON WSA



TAYLOR CREEK CANYON WSA

- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 35 acres of the Taylor Creek Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA lies adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, the Taylor Creek Canyon WSA could be retained by BLM or transferred (along with nine other small WSAs) (refer to Map 3) to NPS, who would then assume management responsibilities. For the purposes of this analysis it is assumed that BLM would retain management of the Taylor Creek Canyon WSA; it would be managed in part with the contiguous NPS-proposed wilderness in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981) to preserve its wilderness character.

No State lands are located in or adjacent to the WSA (refer to Map 1). The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

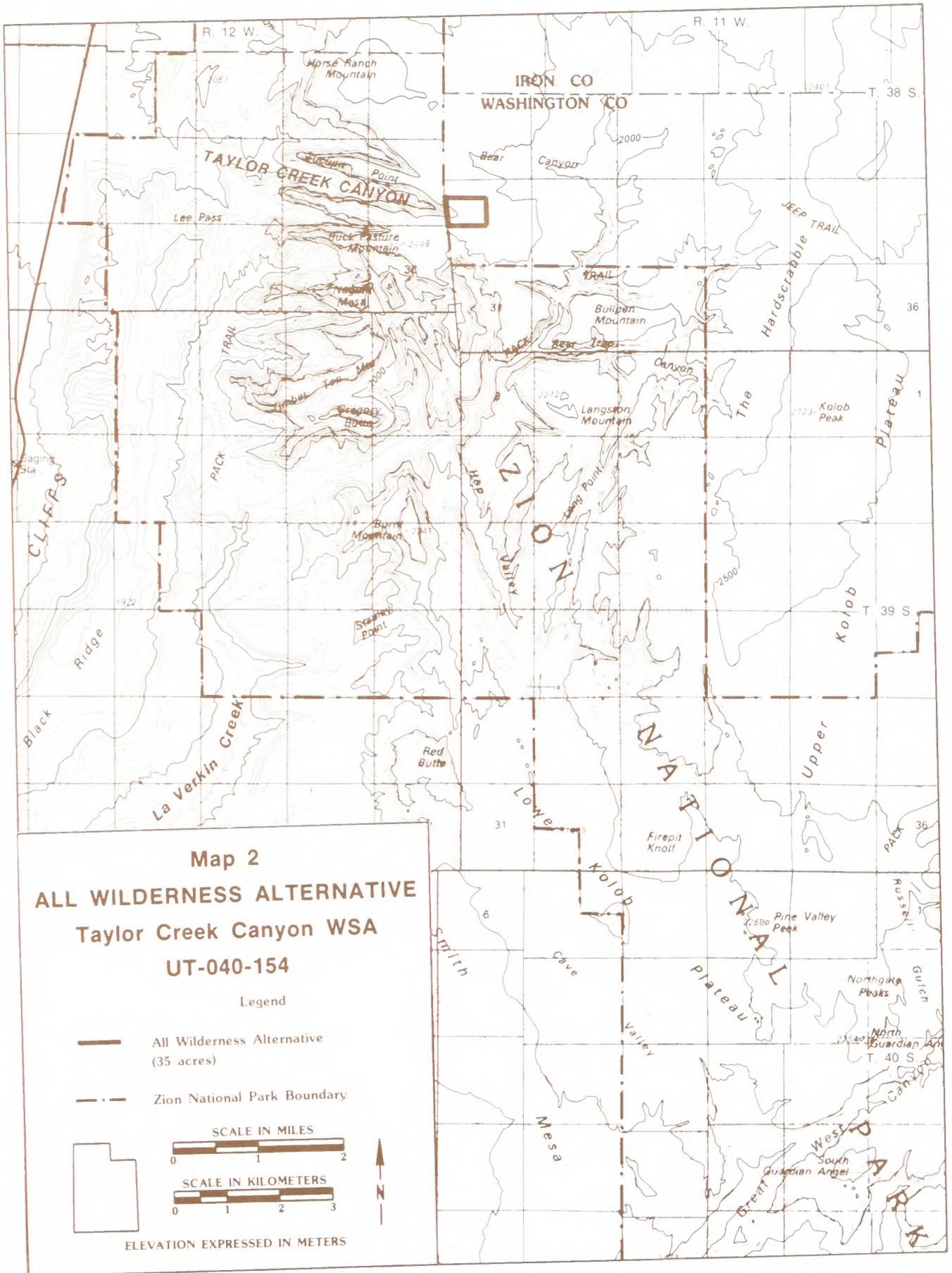
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 35 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims have been located in the WSA. Existing oil and gas leases involving 35 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown.
- No livestock use has occurred in the WSA, and nonuse would continue.
- New water resource facilities or watershed activities not related to rangeland or wildlife

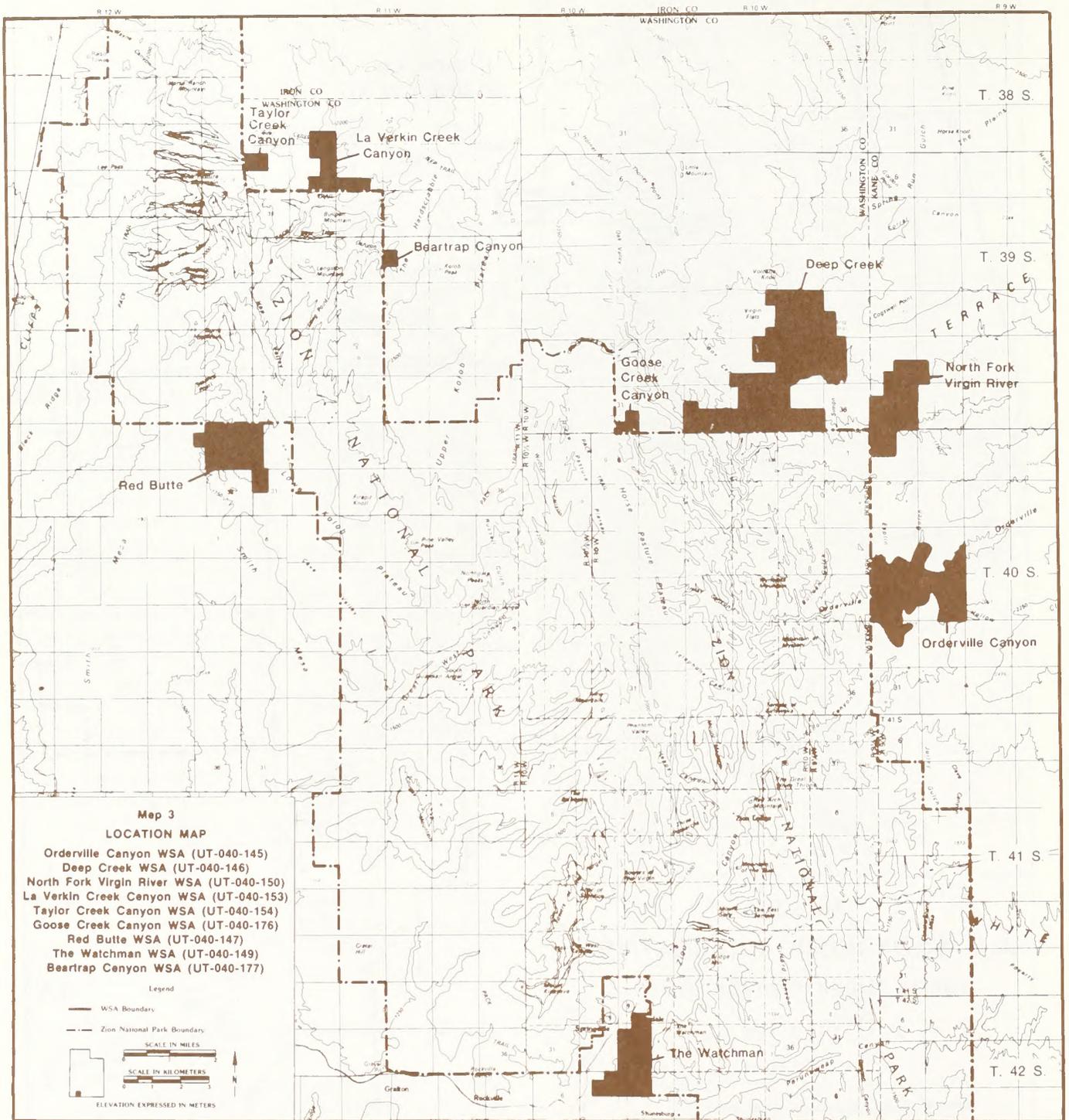
management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Taylor Creek Canyon WSA, and none are currently planned.

- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 35-acre area would be closed to off-road vehicle (ORV) use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions. There are no ways in the WSA. A dirt road forms part of the eastern boundary of the WSA.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 35-acre wilderness.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research

TAYLOR CREEK CANYON WSA



TAYLOR CREEK CANYON WSA



and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

No appreciable environmental impacts would result from the No Action or the All Wilderness Alternative.

AFFECTED ENVIRONMENT

Air Quality

Air quality is excellent (Prevention of Significant Deterioration [PSD] Class II). Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM, 1980c). Zion National Park, contiguous with the WSA, is designated as Class I under the PSD regulations.

Geology

The Taylor Creek Canyon WSA lies within the Grand Staircase Section of the Colorado Plateau Physiographic Province. The WSA consists essentially of the head of the canyon of the Middle Fork of Taylor Creek.

The lowest elevation is approximately 6,800 feet and is found along the western boundary of the WSA at the bottom of the Middle Fork of Taylor

Creek Canyon. The highest elevation is approximately 7,700 feet and is found along the eastern boundary of the WSA on the ridge above the Middle Fork of Taylor Creek Canyon.

Drainage is the Middle Fork of Taylor Creek and flows from east to west throughout the WSA.

Rocks of Jurassic age totaling about 1,000 feet crop out in the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 10,000 feet thick (Hintze, 1973). Marine sediments of the Carmel Formation form the most extensive outcrops in the WSA, with about 400 feet exposed on the higher elevations. Approximately 600 feet of cross-bedded eolian sandstone of the Navajo Formation is exposed within the canyon.

No faults or other structures are known to occur within the WSA. However, the north-south trending Hurricane Fault is located 4 miles west of the WSA.

Soils

The soils are mapped by the *Washington County Soil Survey* (U.S. Department of Agriculture, Soil Conservation Service, 1977) as Paunsaugunt-Kolob-Dalcan association or rock outcrop-rockland association. These are excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is moderate to severe, and the erosion condition classification is slight. Erosion condition as determined by using soil surface factors is summarized in Table 1 (terms are defined in the Glossary).

Soils are used for range, wildlife, and recreation and are unsuitable for agriculture.

TABLE 1
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	0	0	0
Slight	0.6	35	100	21
Stable	0.3	0	0	0
Total		35	100	21

Sources: USDI, BLM, 1979a; Leifeste, 1978.

TAYLOR CREEK CANYON WSA

Vegetation

Over 500 plant species are known to occur in adjacent Zion National Park. Existing vegetation in the WSA is comprised of two major types, coniferous forest (6 acres) and shrub woodland (8 acres). However, over 60 percent (21 acres) of the WSA is barren with rock outcrops.

Available data indicate no sensitive, threatened, or endangered plant species occur in this WSA.

This WSA is in the transition of the Colorado Plateau and Rocky Mountain Forest Province Ecoregions, as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). This transition has a diverse vegetation, with plants from each of these ecoregions being represented.

The potential natural vegetation (PNV) types of the WSA are Arizona pine forest and juniper-pinyon woodland (USDI, Geological Survey, 1978). PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. There are no existing water rights and the area is presently closed to further applications, although the Utah State Water Engineer has stated some applications could be considered, depending on water use and location. There are no withdrawals present in the WSA.

There are no perennial surface waters in the WSA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 1- was assigned to the Taylor Creek Canyon WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location

of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 2.

TABLE 2
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic ft. of gas
Uranium	f2	c1	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development. The one lease covering the WSA is post-FLPMA.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981).

LOCATABLE MINERALS

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA.

Uranium

No uranium deposits are known to occur within the WSA. The Moenave and Chinle Formations are the only rock units in this area considered favorable for uranium. SAI (1982) speculates that the Moenave and Chinle Formations within the WSA have a very low certainty for occurrence of uranium. It is estimated that the WSA and adjoining areas have less than 500 tons of uranium oxide.

Wildlife

Because this WSA occurs in the transition of two vegetation ecoregions, it may support a variety of animal species. The Virgin River Unit Resource Analysis (USDI, BLM, 1979a) indicates approximately 300 vertebrate animal species could inhabit the WSA. These include 60 mammal species, 208 bird species, 20 reptile species, six amphibian species, and three fish species. No critical wildlife habitat areas have been identified within the WSA.

Raptors may include golden eagle, bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common. The bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony valleys west of the WSA. An active peregrine falcon nest occurs in Taylor Creek Canyon in Zion National Park downstream from the WSA. Occasional sightings of these birds have been made, with most reports occurring in the

Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur in the vicinity. No other threatened or endangered species are known to inhabit the WSA. The golden eagle, which may inhabit the WSA, is a BLM sensitive species.

Mountain lion activity in the vicinity is heavy compared to other areas in Utah. In past years the Federal Government has controlled the cougars in the area to keep livestock predation under control. During the 1976 hunting season 11 cougars were taken from UDWR Herd Unit 5B (which includes the WSA), the largest number for any herd unit in the State.

No acres are planned for vegetation treatment nor are any wildlife facilities proposed.

Forest Resources

Although there are some individual trees with commercial value in the Rocky Mountain forest zone, as a whole the forest resources in the WSA have no commercial value. There is presently no forest product use and none is planned.

Livestock and Wild Horses/Burros

The Taylor Creek Canyon WSA lies within the Cedar Mountain Allotment which is grazed by 800 sheep from June 16 to October 15. Only 3 percent of this allotment is Federal range (20 AUMs). One permittee uses the allotment. All of the WSA is unsuitable for livestock use due to steep terrain. There are no other agricultural uses. There are no existing range improvements and none proposed. There is no potential for land treatment.

Wild horses and burros do not use the WSA.

Visual Resources

This WSA was judged to be Scenic Class A, exceptional, during preparation of the Virgin River Unit Resource Analysis (USDI, BLM, 1979a). The WSA shares the same features as Zion National Park, one of the nation's most important tourist attractions with a worldwide reputation for scenic splendor. The VRM Class is II. Refer to Appendix 7 for a description of BLM's VRM rating system.

Cultural Resources

Petroglyphs, stone granaries, and rock shelters are known to exist in Zion National Park and the general vicinity. However, no archaeological

inventory exists on this specific WSA and no cultural values have been identified.

Recreation

Recreational use of the WSA is nearly nonexistent due to its steep terrain. Access to Zion National Park cannot be obtained through the WSA because of high cliffs.

The WSA receives some recreational use by sightseers peering over the rim and looking down Taylor Creek. It is estimated that visitor use would be less than 50 visitor days per year. Motorized recreational use does not occur on this WSA because of the rugged terrain.

Wilderness Values

SIZE

The 35-acre Taylor Creek WSA is in the shape of a square, approximately .25 mile wide and long. The WSA is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous proposed wilderness area in Zion National Park. If managed in part with the NPS unit, the WSA would be a viable wilderness area.

NATURALNESS

The imprint of man's work is substantially unnoticeable. There are no known imprints within the WSA.

SOLITUDE

The narrow sheer-walled canyon of the Middle Fork of Taylor Creek that continues into Zion National Park offers opportunities for solitude. The unit by itself is not considered to have outstanding opportunities for solitude; however, if considered in conjunction with Zion National Park, it would.

PRIMITIVE AND UNCONFINED RECREATION

The canyon bottoms of the Middle Fork of Taylor Creek offer primitive and unconfined recreation opportunities such as hiking, backpacking, and photography. The WSA by itself is not considered to have outstanding opportunities for primitive and unconfined recreation; however, if considered in conjunction with the proposed wilderness area in Zion National Park, it would.

SPECIAL FEATURES

The steep canyons of the WSA are habitat for raptors, including falcons. The WSA has excep-

tional scenic values as natural extensions of Zion National Park.

Land Use Plans and Controls

There are no State or private in-holdings, subsurface rights, or rights-of-way in the WSA. The land is presently used for unconfined and primitive forms of outdoor recreation and wildlife habitat. The NPS land adjacent to the WSA has been administratively endorsed for wilderness.

The Statement of Management for Zion National Park is ". . . to maintain the quality and flow of water from all natural water sources that have been traditionally important in serving domestic needs and in perpetuating the Park's ecological communities" (USDI, NPS, 1976). NPS has shown interest in nondevelopment of adjacent lands in order that the Park's watershed remain unimpaired.

In 1984 the House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214, a bill designed to transfer jurisdiction of certain lands, including the Taylor Creek Canyon WSA, from the BLM to the NPS. In response to the hearing, NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984).

The NPS concluded that the Taylor Creek Canyon WSA would add a minor buffer zone to the Park but value and contribution to the NPS unit would be insignificant. In a February 6, 1985 letter from the U.S. Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the Taylor Creek Canyon WSA was recommended as suitable for inclusion into the adjacent unit of the NPS. The letter indicated that the WSA did not meet all of the NPS criteria for inclusion into the park. However, there was no objection to transferring the WSA from BLM to NPS administration because the WSA is isolated by park and private lands and is uneconomical for BLM to manage. No Congressional action has been taken on that recommendation.

The *Washington County Master Plan* (Planning and Research Associates, 1971) identifies the WSA as an open space zone, and the Washington County policy does not support wilderness designation for this WSA.

The WSA is managed under the BLM Virgin River Planning Unit MFP (USDI, BLM, 1979b) which allows multiple uses as noted in the Description of uses the No Action Alternative.

TAYLOR CREEK CANYON WSA

Socioeconomics

DEMOGRAPHICS

Kane and Washington Counties are the local, social, and economic influence zones of the WSA.

Kane County is rural with a total of 4,024 residents and an average population density of approximately one person per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Washington County is also basically a rural county except for the population centers near the City of St. George. The total population of Washington County is 26,065 for an average population density of 10.8 persons per square mile.

EMPLOYMENT

The economies of both Kane and Washington Counties are dominated by three employment sectors: retail trade, services, and government. In Kane County both retail trade and government account for 17 percent of the total employment, and the services sector provides 14 percent. In Washington County the retail trade sector provides 21 percent, government 19 percent, and services 11 percent of the total employment. Personal income is in proportion to employment. Employment and income figures for the two counties are presented in Table 3.

TABLE 3
1980 Employment and Personal Income
Kane and Washington Counties, Utah

Industrial Sector	Kane County		Washington County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	1,452	12,595	7,866	84,499
Proprietors	382	2,623	1,469	14,010
Farm Proprietors	122	136	343	2,386
Nonfarm Proprietors	260	2,487	1,126	11,624
By Industry Source	-	-	-	-
Farm	27	382	98	3,031
Nonfarm	1,043	12,213	6,299	80,418
Private	798	9,614	4,805	63,399
Ag. Serv., For., Fish, and Other	(L)	0	29	724
Mining	17	196	70	1,347
Construction	51	1,544	537	9,425
Manufacturing	70	566	698	9,759
Nondurable Goods	(D)	(D)	441	5,986
Durable Goods	(D)	(D)	257	3,773
Transportation and Public Utilities	150	1,875	236	4,996
Wholesale Trade	12	230	263	3,963
Retail Trade	252	2,364	1,673	14,741
Finance, Insurance, and Real Estate	39	392	424	5,201
Services	202	2,427	875	13,243
Government and Government Enterprises	245	2,599	1,494	17,019
Federal, Civilian	18	252	193	2,725
Federal, Military	30	78	161	425
State and Local	197	2,269	1,140	13,869

Source: USDI, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

TAYLOR CREEK CANYON WSA

INCOME AND REVENUES

Economic-related activities in the WSA include livestock production and recreation. Table 4 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Taylor Creek Canyon WSA is estimated as about 50 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Kane and Washington Counties.

The WSA generates Federal revenues from mineral lease sources (refer to Table 4). Oil and gas leases in the WSA cover approximately 35 acres. At up to \$3 per half acre, lease rental fees generate up to \$105 of Federal revenues annually. Half of these monies are allocated to the State which, in turn, reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

TABLE 4
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$105
Mineral Production	0	0
Livestock Grazing	0	0
Woodland Products	0	0
Recreational Use	Less than \$205	0
Total	Less than \$205	Up to \$105

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Taylor Creek Canyon WSA is located at the very extreme upper end of the Middle Fork of Taylor Creek. The WSA encompasses only 35 acres confined into a steep narrow canyon, most of which is barren rock outcrop. Vertical walls and narrow canyon bottoms make the unit impassable. The potential uses of the WSA are practically nonexistent because of its characteristics and extremely low mineral potential (mineral OIR of 1-[SAI, 1982]). No change in use of the WSA's environment is foreseen under the No Action Alternative or the All Wilderness Alternative. Therefore, no environmental impacts would result from wilderness designation or nondesignation. The No Action Alternative would be consistent with Washington County policy, but the All Wilderness Alternative would not.

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Goose Creek Canyon WSA



GOOSE CREEK CANYON WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative (Proposed Action)	4
Summary of Environmental Consequences	7
AFFECTED ENVIRONMENT	7
Air Quality	7
Geology	7
Soils	7
Vegetation	7
Water Resources	8
Mineral and Energy Resources	8
Wildlife	9
Forest Resources	9
Livestock and Wild Horses/Burros	10
Visual Resources	10
Cultural Resources	10
Recreation	10
Wilderness Values	10
Land Use Plans and Controls	10
Socioeconomics	11
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	12
BIBLIOGRAPHY	13

GOOSE CREEK CANYON WSA (UT-040-176)

INTRODUCTION

General Description of the Area

Goose Creek lies along the boundary of Zion National Park in the northeast corner of Washington County. It is adjacent to a National Park Service (NPS) administratively endorsed wilderness proposal encompassing 120,620 acres. Goose Creek Canyon Wilderness Study Area (WSA) contains 89 acres administered by the BLM's Cedar City District.

The WSA's topography is dominated by Goose Creek drainage. The canyon rims are approximately 2,000 feet above the creek exposing various rock formations. The climate within the WSA is considered mild with average temperatures ranging from the low 40s during the winter months to the high 80s during mid-summer. Temperature extremes can vary from 0 to 105 degrees Fahrenheit (F). Average annual precipitation in Zion National Park is 14.5 inches with about half occurring in the form of winter snow and half during summer thunderstorms. Winds usually prevail from the southwest with the strongest winds occurring in March and April.

There are no private or State lands located within the WSA.

This WSA was dropped from wilderness study status by the U.S. Secretary of the Interior on December 30, 1982 due to its small size. As a result of a decision of the Eastern District Court of California (*Sierra Club v. Watt*, No. Civil 5-83-035, LRK, dated April 18, 1985) it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA) and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres, if they are adjacent to land with wilderness potential administered by other Federal agencies.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I. Public opportunity to review and comment on an initial draft analysis of this area occurred in August 1982. Because of the 1982 decision of the Secretary of the Interior, the area was not among those listed in the brochure used for the 1984 EIS scoping meetings (USDI, BLM, 1984a), but the specific issues and concerns expressed earlier apply and are as follows:

1. *Comment:* Based on size, this area does not qualify for further consideration as a wilderness area. All other normal considerations mandated as a part of the EIS must be adequately treated to the satisfaction of the Commission.

Response: This WSA is adjacent to a proposed wilderness area in Zion National Park. BLM has authority under Section 202 of FLPMA to study units of less than 5,000 acres.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal land use plans?

Response: Consistency with land use plans is discussed in the Land Use Plans and Controls sections of this document. Management following wilderness designation of this unit would be consistent with management of the proposed wilderness area in Zion National Park.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Due to the small size of the WSA and the lack of any significant resource conflicts with wilderness designation, no partial wilderness alternatives were considered.

Transfer of several WSAs, including the Goose Creek Canyon WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, because BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness



and because the outcome of the NPS wilderness proposals and H.R. 1213 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the "BLM Wilderness Study Policy" (USDI, BLM 1982b) requires the BLM in its Wilderness Study Report to determine whether (1) the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency administering the contiguous wilderness area. BLM has determined that the Goose Creek Canyon WSA would not be a viable independent wilderness if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions (i.e., relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items). Environmental differences, if any, would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation, and therefore are not relevant to the analyses of impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (89 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

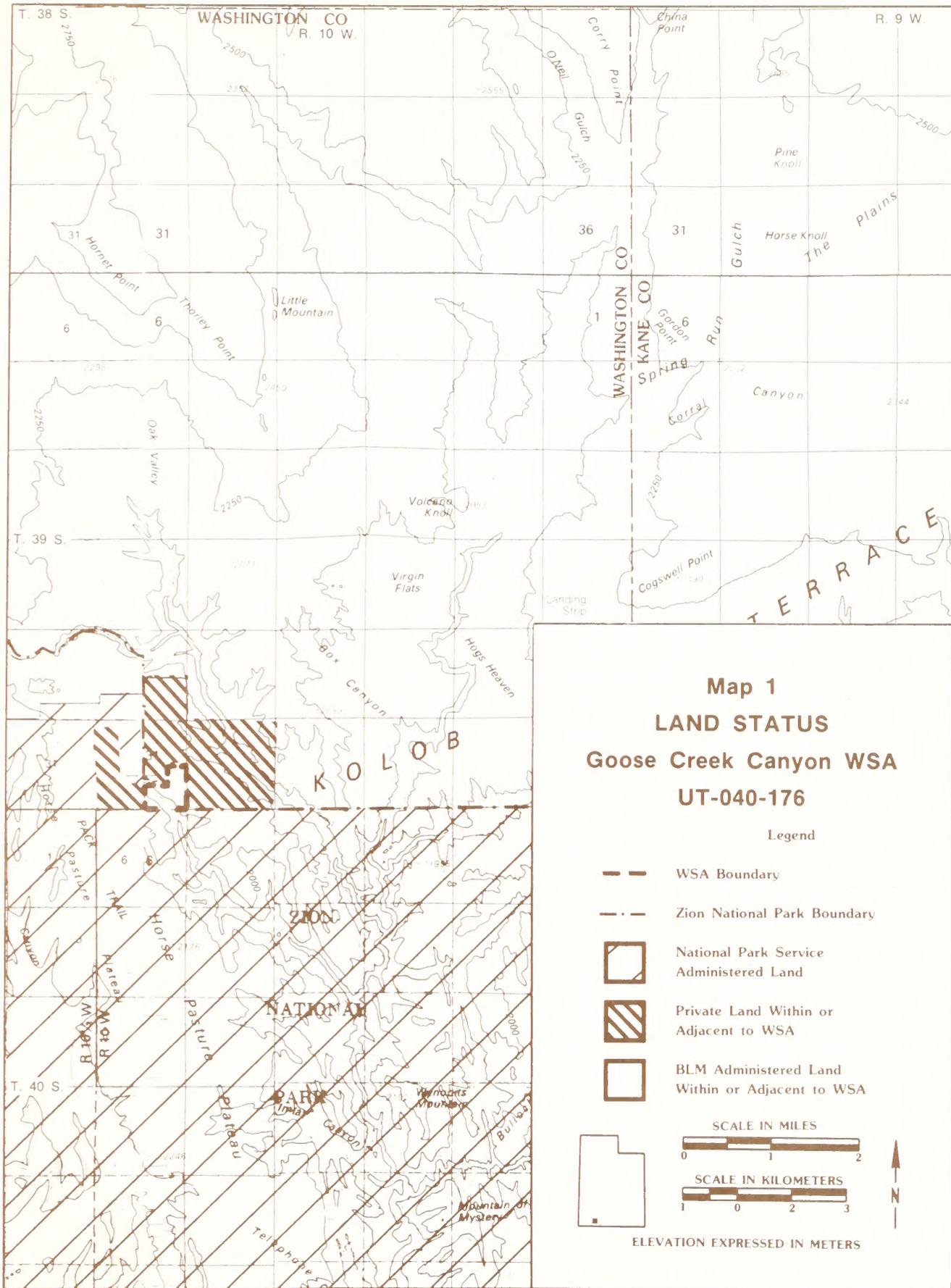
NO ACTION ALTERNATIVE

Under this alternative, none of the 89-acre Goose Creek Canyon WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Virgin River Planning Unit Management Framework Plan (MFP) (USDI, BLM 1979b). No State lands lie within or near the WSA (refer to Map 1).

The following are specific actions that would take place under this alternative:

- All 89 acres would remain open to mineral location, leasing, and sale. There are no mining claims in the WSA at the present time. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing and future oil and gas leases could be developed under standard stipulations (Category 1) on the 89-acre area.
- There is no present domestic livestock grazing use in the WSA. Part of the WSA is potentially suitable (lacking water), but there is no authorized use. There are no existing range developments in the WSA. New rangeland developments could be implemented without wilderness considerations. No developments are currently planned.
- Developments for wildlife, water resources, etc. would be allowed without concern for wilderness values if in conformance with the current BLM land use plan. None of these developments are currently planned.
- The entire WSA acreage would be open to vehicular use and new access routes would be allowed.
- The entire 89-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The entire area would continue to be managed under Visual Resource Management (VRM) Class II.
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.

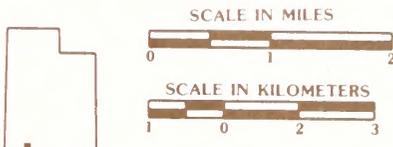
GOOSE CREEK CANYON WSA



Map 1
LAND STATUS
Goose Creek Canyon WSA
UT-040-176

Legend

-  WSA Boundary
-  Zion National Park Boundary
-  National Park Service Administered Land
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA



ELEVATION EXPRESSED IN METERS

GOOSE CREEK CANYON WSA

- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 89 acres of the Goose Creek Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA lies adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, the possibility exists that the Goose Creek Canyon WSA could be retained by BLM or transferred (along with nine other small WSAs) (refer to Map 3) to the NPS, who would then assume management responsibilities. For the purposes of this analysis it is assumed that BLM would retain management of the Goose Creek Canyon WSA and it would be managed in part with the contiguous NPS-proposed wilderness in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981) to preserve its wilderness character.

No State lands are located in or adjacent to the WSA (refer to Map 1). The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

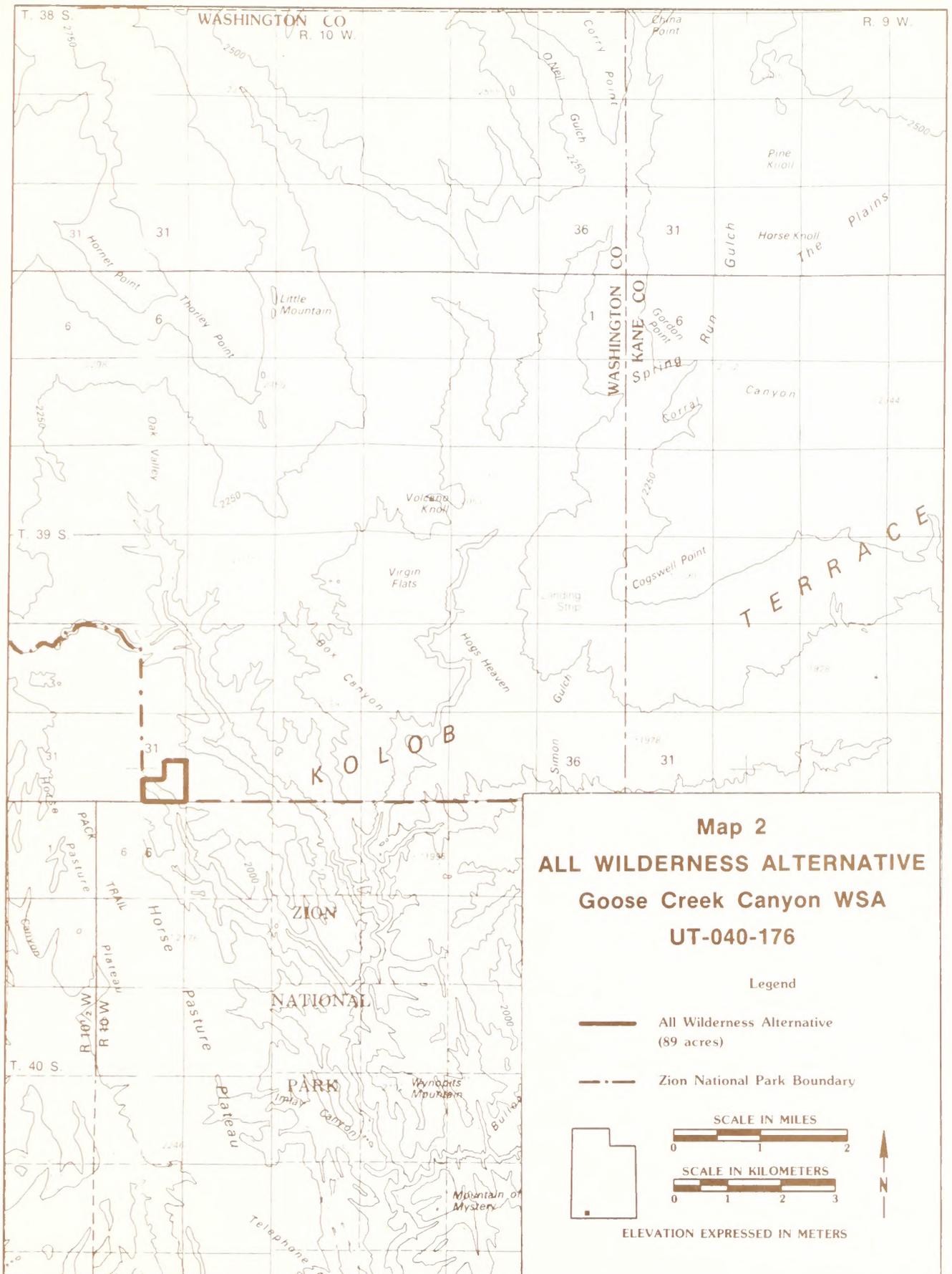
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 89 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims have been located in the WSA. An existing oil and gas lease involving 89 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown.
- No livestock use has occurred within the WSA, and nonuse would continue.
- New water resource facilities or watershed

activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Goose Creek Canyon WSA, and none are currently planned.

- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 89-acre area would be closed to off-road vehicle (ORV) use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions. The dirt road forming the northern boundary would remain open for vehicle use.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 89-acre wilderness.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted

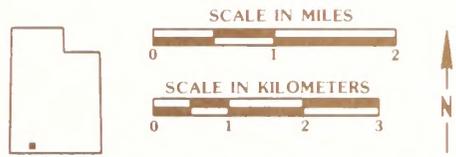
GOOSE CREEK CANYON WSA



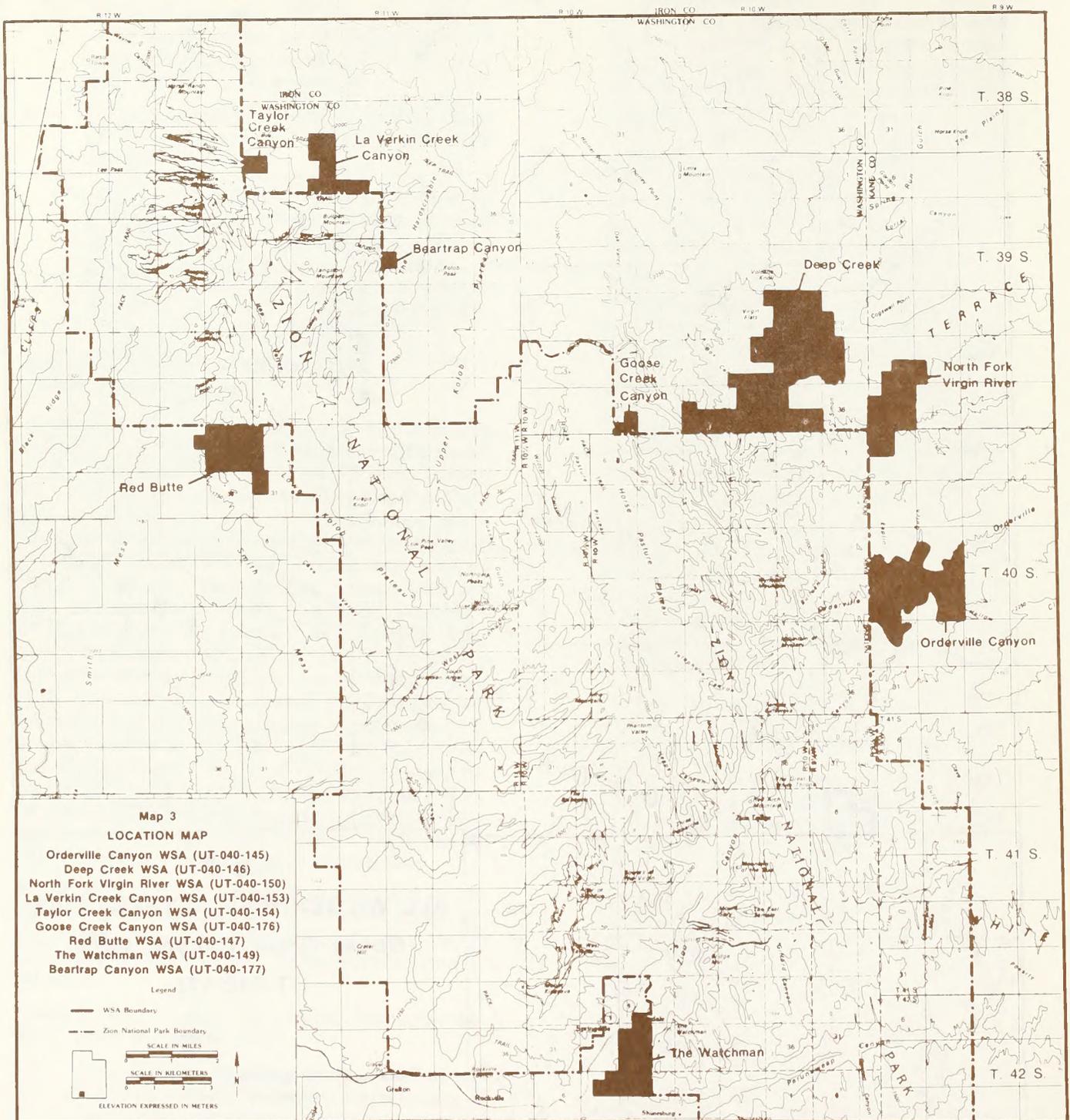
Map 2
ALL WILDERNESS ALTERNATIVE
Goose Creek Canyon WSA
UT-040-176

Legend

-  All Wilderness Alternative (89 acres)
-  Zion National Park Boundary



GOOSE CREEK CANYON WSA



GOOSE CREEK CANYON WSA

without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

No appreciable environmental impacts would result from the No Action or the All Wilderness Alternative.

AFFECTED ENVIRONMENT

Air Quality

Air quality is excellent (Prevention of Significant Deterioration [PSD] Class II). Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM, 1980c). Zion National Park, contiguous with the WSA, is designated as Class I under the PSD regulations.

Geology

The Goose Creek Canyon WSA lies within the Grand Staircase Section of the Colorado Plateau Physiographic Province. The WSA consists of the upper end of Goose Creek Canyon.

Elevations range from about 7,000 feet above sea level along the ridgetop forming the north boundary of the WSA, to about 5,000 feet above sea level in the bottom of Goose Creek Canyon along the southern boundary of the WSA.

The only drainage is Goose Creek Canyon which runs from northwest to southwest through the WSA.

Rocks of Jurassic age, totaling about 1,700 feet in thickness, crop out in the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 10,000 feet thick (Hintze, 1973). Marine sediments of the Jurassic Carmel Formation form the most extensive outcrops in the WSA, with approximately 1,000 feet exposed in the higher elevations. Approximately 700 feet of cross-bedded eolian sandstone of the Jurassic Navajo Formation is exposed in the lower elevations.

Soils

There are some isolated pockets of productive soils within this WSA, but they are very small and undelineated. Most of the soils are mapped by the *Washington County Soil Survey* (U.S. Department of Agriculture, Soil Conservation Service, 1977) as Paunsaugunt-Kolob-Dalcán association or rock outcrop-rockland association. These are excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is moderate to severe, and the erosion condition classification is slight. Erosion condition as determined by using soil surface factors is summarized in Table 1 (terms are defined in the Glossary).

Soils are used for range, wildlife, and recreation and are unsuitable for agriculture.

TABLE 1
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	0	0	0
Slight	0.6	89	100	53
Stable	0.3	0	0	0
Total		89	100	53

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

Over 500 plant species are known to occur in adjacent Zion National Park. Existing vegetation in the WSA is comprised primarily of coniferous forest. It is characterized by ponderosa pine,

Douglas fir, white fir, aspen, and Rocky Mountain juniper.

Approximately 20 percent of the WSA is barren rock outcrop.

Available data indicate no sensitive, threatened, or endangered plant species occur in this WSA.

This WSA is in the transition of the Colorado Plateau and Rocky Mountain Forest Province Ecoregions, as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). This transition has a diverse vegetation, with plants from each of these ecoregions being represented. The potential natural vegetation (PNV) types of the WSA are Arizona pine forest and juniper-pinyon woodland (USDI, Geological Survey, 1978). PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. There are no existing water rights and the area is presently closed to further applications, although the Utah State Water Engineer has stated that some applications could be considered, depending on water use and location. There are no withdrawals present in the WSA.

Goose Creek Canyon WSA has no permanent surface waters present, although some water may be present in Goose Creek during the rainy season (July through September). Water quality is sufficient for the existing wildlife use. Goose Creek runs north to south for about .25 mile on the west side of the area. There is a potential for well development in the Navajo Sandstone Formation, which is known to be a good water producer. Flash floods in Goose Creek could be a hazard during the summer rainy season.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 1- was assigned to the Goose Creek Canyon WSA by SAI

(1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 2.

**TABLE 2
Mineral and Energy Resource Rating Summary**

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic ft. of gas
Uranium	f2	c2	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

All 89 acres in this WSA are open to oil and gas leasing (Category 1). There are 89 acres under a post-FLPMA lease with special protective stipulations. Based on similarities between the Virgin Oil Field (located approximately 12 miles south of the WSA) and this WSA and on the relatively unsuccessful history of exploration to date in the region, oil and gas favorability is considered low, even though there is a potential for less than 10 million barrels of oil and 60 billion cubic feet of natural gas in-place in the vicinity of the WSA.

Coal

The WSA is underlain by pre-Cretaceous rock not known to contain any coal.

Geothermal

No evidence is available to indicate that geothermal resources occur within the WSA.

LOCATABLE MINERALS

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA.

Uranium

No uranium deposits are known to occur within the WSA. The Moenave and Chinle Formations are the only rock units in this area considered favorable for uranium. SAI (1982) speculates that the Moenave and Chinle Formations within the WSA have a very low certainty for occurrence of uranium. The uranium-bearing rock is 3,000 feet below the surface. It is estimated the WSA and adjoining lands have less than 500 tons of uranium oxide.

Wildlife

Because this WSA occurs in the transition of two vegetation ecoregions, it supports a variety of animal species. The Virgin River Unit Resource Analysis (USDI, BLM, 1979a) indicates approximately 300 vertebrate animal species could inhabit the WSA. These include 60 mammal species, 208 bird species, 20 reptile species, six amphibian species, and three fish species. No critical wildlife habitat areas have been identified within the WSA.

Raptors may include golden eagle, bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common. The bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony valleys west of the WSA. Occasional sightings of these birds have been made, with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur in the vicinity. No other sensitive, threatened, or endangered species are known to inhabit the WSA. The golden eagle, which may inhabit the WSA, is a BLM sensitive species.

Mountain lion activity in the vicinity is heavy compared to other areas in Utah. In past years the Federal Government has controlled the cougars in the area to keep livestock predation under control. During the 1976 hunting season 11 cougars were taken from UDWR Herd Unit 58 (which includes the WSA), the largest number for any herd unit in the State.

No acres are planned for vegetation treatment nor are any wildlife facilities proposed.

Forest Resources

Although there are some individual trees with

commercial value in the Rocky Mountain forest zone, as a whole there are no commercial values to the forest resources on the WSA. There is presently no forest product use and none is planned.

Livestock and Wild Horses/Burros

The Goose Creek Canyon WSA lies within the Slack Allotment. Although 58 percent of the unit is suitable and the remaining 42 percent is potentially suitable (lacking water) for livestock use, there is presently no authorized grazing use. There are no existing or proposed range improvements and no land treatment potential.

There are no wild horses or burros in the unit.

Visual Resources

This WSA was judged to be Scenic Class A, exceptional, during preparation of the Virgin River Unit Resource Analysis (USDI, BLM, 1979a). The WSA shares the same features as Zion National Park, one of the nation's most important tourist attractions with a worldwide reputation for scenic splendor. The VRM Class is II. Refer to Appendix 7 for a description of BLM's VRM rating system.

Cultural Resources

Petroglyphs, stone granaries, and rock shelters are known to exist in Zion National Park and the general vicinity. However, no archaeological inventory exists on this specific WSA and no cultural values have been identified.

Recreation

Recreational use of the WSA is nearly nonexistent. Goose Creek Canyon cannot be accessed except through the Park. Vertical rock walls prohibit access to the Zion portion of the canyon from the WSA.

Visitor use data do not exist. It is assumed, however, that approximately 100 visitor days occur annually in the WSA. Most of this use would be from people using the dirt road that forms the northern boundary of the WSA, and hiking into the WSA to view Goose Creek Canyon. Rugged terrain prevents use of ORVs in the WSA.

Wilderness Values

SIZE

The Goose Creek Canyon WSA is in the shape of a rectangle approximately .25 mile wide and .50 long, encompassing 89 acres. The WSA is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous proposed wilderness area in Zion National Park. If managed in part with the contiguous NPS unit, the WSA would be a viable wilderness area.

NATURALNESS

The imprint of man's work is substantially unnoticeable. There are no known imprints within the WSA.

SOLITUDE

The narrow sheer-walled canyons of Goose Creek offer opportunities for solitude. The unit by itself is not considered to have outstanding opportunities for solitude; however, if considered in conjunction with Zion National Park, it would.

PRIMITIVE AND UNCONFINED RECREATION

The canyon bottoms of Goose Creek offer primitive and unconfined recreation opportunities such as hiking, backpacking, and photography. The WSA by itself is not considered to have outstanding opportunities for primitive and unconfined recreation; however, if considered in conjunction with the proposed wilderness area in Zion National Park, it would.

SPECIAL FEATURES

The steep canyons of the WSA are habitat for raptors, including falcons. The WSA has exceptional scenic values as natural extensions of Zion National Park.

Land Use Plans and Controls

There are no State or private in-holdings, subsurface rights, or rights-of-way in the WSA. The land is presently used for unconfined and primitive forms of outdoor recreation and wildlife habitat. The NPS land adjacent to the WSA has been administratively endorsed for wilderness.

The Statement of Management for Zion National Park is " . . . to maintain the quality and flow of water from all natural water sources that have been traditionally important in serving domestic needs and in perpetuating the Park's ecological

communities" (USDI, NPS, 1976). NPS has shown interest in nondevelopment of adjacent lands in order that the Park's watershed remain unimpaired.

In 1984 the House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214, a bill designed to transfer jurisdiction of certain lands, including the Goose Creek Canyon WSA, from the BLM to the NPS. In response to the hearing, the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984a and 1984b). The NPS found that the Goose Creek Canyon WSA contained significant recreational values that importantly supplement those within the Zion National Park boundary. In a February 6, 1985 letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the Goose Creek Canyon WSA was recommended as suitable for inclusion into the adjacent unit of the National Park System. No Congressional action has been taken on that recommendation.

The *Washington County Master Plan* (Planning and Research Associates, 1971) identifies the WSA as an open space zone, and the Washington County policy does not support wilderness designation for this WSA.

The WSA is managed under the BLM Virgin River Planning Unit MFP (USDI, BLM, 1979b) which allows multiple uses as noted in the Description of the No Action Alternative.

Socioeconomics

DEMOGRAPHICS

Kane and Washington Counties are the local, social, and economic influence zones of the WSA.

Kane County is rural with a total of 4,024 residents and an average population density of approximately one person per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981). Washington County is also basically a rural county except for the population centers near the City of St. George. The total population of Washington County is 26,065 for an average population density of 10.8 persons per square mile.

EMPLOYMENT

The economies of both Kane and Washington Counties are dominated by three employment sectors: retail trade, services, and government. In Kane County both retail trade and government

account for 17 percent of the total employment, and the services sector provides 14 percent. In Washington County the retail trade sector provides 21 percent, government 19 percent, and services 11 percent of the total employment. Personal income is in proportion to employment. Employment and income figures for the two counties are presented in Table 3.

INCOME AND REVENUES

Economic-related activities in the WSA include mineral leasing and recreation. Table 4 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

**TABLE 4
Local Sales And Federal Revenues**

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	0	\$267
Mineral Production	0	0
Livestock Grazing	0	0
Woodland Products	0	0
Recreational Use	Less than \$410	Up to \$267
Total	Less than \$410	Up to \$267

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

No oil and gas or minerals have been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Goose Creek Canyon WSA is estimated as about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Kane and Washington Counties.

The WSA generates Federal revenues from mineral lease sources (refer to Table 4). Oil and gas leases in the WSA cover 89 acres. At up to \$3 per acre, lease rental fees generate up to \$267 of

TABLE 3
1980 Employment and Personal Income
Kane and Washington Counties, Utah

Industrial Sector	Kane County		Washington County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	1,452	12,595	7,866	84,499
Proprietors	382	2,623	1,469	14,010
Farm Proprietors	122	136	343	2,386
Nonfarm Proprietors	260	2,487	1,126	11,624
By Industry Source	-	-	-	-
Farm	27	382	98	3,031
Nonfarm	1,043	12,213	6,299	80,418
Private	798	9,614	4,805	63,399
Ag. Serv., For., Fish, and Other	(L)	0	29	724
Mining	17	196	70	1,347
Construction	51	1,544	537	9,425
Manufacturing	70	566	698	9,759
Nondurable Goods	(D)	(D)	441	5,986
Durable Goods	(D)	(D)	257	3,773
Transportation and Public Utilities	150	1,875	236	4,996
Wholesale Trade	12	230	263	3,963
Retail Trade	252	2,364	1,673	14,741
Finance, Insurance, and Real Estate Services	39	392	424	5,201
Services	202	2,427	875	13,243
Government and Government Enterprises	245	2,599	1,494	17,019
Federal, Civilian	18	252	193	2,725
Federal, Military	30	78	161	425
State and Local	197	2,269	1,140	13,869

Source: USDI, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

Federal revenues annually. Half of these monies are allocated to the State which, in turn, reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Goose Creek Canyon WSA is located at the upper end of the Goose Creek. The WSA encompasses

only 89 acres, 20 percent of which is confined into a steep narrow canyon. Vertical walls and narrow canyon bottoms make the unit impossible to cross. The potential for use of the WSA is practically nonexistent because of its site characteristics and its extremely low mineral potential (mineral OIR of 1[SAI, 1982]). No change in use of the WSA's environment is foreseen under the No Action Alternative or the All Wilderness Alternative. Therefore, no significant environmental impacts would result from wilderness designation or nondesignation. The No Action Alternative would be consistent with Washington County Policy but the All Wilderness Alternative would not.

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GOOSE CREEK CANYON WSA

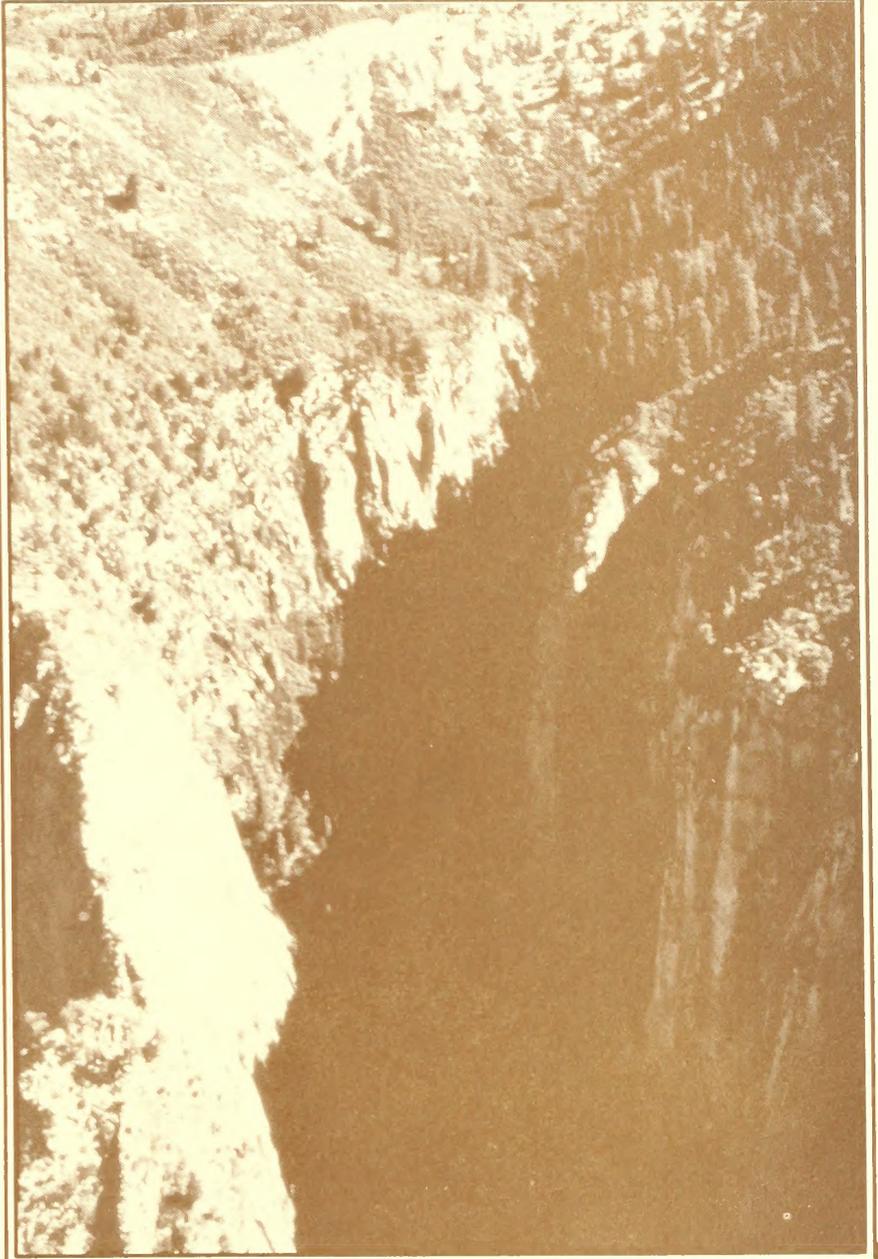
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Beartrap Canyon

WSA



BEARTRAP CANYON WSA

TABLE OF CONTENTS

INTRODUCTION	1
General Description of the Area	1
Specific Issues Identified in Scoping	1
DESCRIPTION OF THE ALTERNATIVES	1
Alternatives Considered and Eliminated from Detailed Study	1
Alternatives Analyzed	2
No Action Alternative	2
All Wilderness Alternative	4
Summary of Environmental Consequences	7
AFFECTED ENVIRONMENT	7
Air Quality	7
Geology	7
Soils	7
Vegetation	7
Water Resources	8
Mineral and Energy Resources	8
Wildlife	9
Forest Resources	9
Livestock and Wild Horses/Burros	9
Visual Resources	9
Cultural Resources	10
Recreation	10
Wilderness Values	10
Land Use Plans and Controls	10
Socioeconomics	11
ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES	11
BIBLIOGRAPHY	13

BEARTRAP CANYON WSA (UT-040-177)

INTRODUCTION

General Description of the Area

Beartrap Canyon lies along the boundary of Zion National Park in the northeast corner of Washington County. It is contiguous with a National Park Service (NPS) administratively endorsed wilderness proposal encompassing 120,620 acres. Beartrap Canyon Wilderness Study Area (WSA) contains 40 acres. It is administered by the BLM's Cedar City District.

The WSA's topography is dominated by Beartrap Canyon and its side drainages. The canyon rims are 1,300 feet above the creek exposing various rock formations. The climate within the WSA is considered mild with average temperatures ranging from the low 40s during the winter months to the high 80s during mid-summer. Temperature extremes can vary from 0 to 105 degrees Fahrenheit (F). Average annual precipitation in Zion National Park is 14.5 inches with about half occurring in the form of winter snow and half during summer thunderstorms. Winds usually prevail from the southwest with the strongest winds occurring in March and April.

There are no private or State lands located within the WSA.

This WSA was dropped from wilderness study status by the U.S. Secretary of the Interior on December 30, 1982 due to its small size. As a result of a decision of the Eastern District Court of California (Sierra Club vs. Watt, No. Civil 5-83-035 LRK, dated April 18, 1985), it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA); and (2) BLM guidance that allows for wilderness consideration of areas less than 5,000 acres, if they are adjacent to land with wilderness potential administered by other Federal agencies.

Specific Issues Identified in Scoping

General issues pertaining to the WSA are discussed in Volume I. Public opportunity to review and comment on an initial draft analysis of this WSA occurred in August 1982. Because of the 1982 decision of the U.S. Secretary of the Interior, the WSA was not among those listed in the brochure used for the 1984 EIS scoping meetings

(USDI, BLM, 1984a); however, the specific issues and concerns expressed earlier apply and are as follows:

1. *Comment:* Based on size, this area does not qualify for further consideration as a wilderness area. All other normal considerations mandated as a part of the EIS must be adequately treated to the satisfaction of the Commission.

Response: This WSA is adjacent to a proposed wilderness area in Zion National Park. BLM has authority under Section 202 of FLPMA to study units of less than 5,000 acres.

2. *Comment:* Would BLM wilderness areas be consistent with other adjoining Federal land use plans?

Response: Consistency with land use plans is discussed in the Land Use Plans and Controls sections of this document. Management following wilderness designation of this unit would be consistent with management of the proposed wilderness area in Zion National Park.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

Due to the small size of the WSA and the lack of significant resource conflicts with wilderness designation no partial wilderness alternatives were considered.

Transfer of several WSAs, including the Beartrap Canyon WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with



and without wilderness designation of the WSA. However, because BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness and because the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM "Wilderness Study Policy" (USDI, BLM, 1982b) requires the BLM in its Wilderness Study Report to determine whether (1) the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency administering the contiguous wilderness area.

BLM has determined that the Beartrap Canyon WSA would not be a viable independent wilderness if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions (i.e., relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar non-environmental items). Environmental differences if any would be due to variations in BLM and NPS mandates and policy (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation, and therefore are not relevant to the analyses of impacts from wilderness designation.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (40 acres). A description of each alternative follows. Where

management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

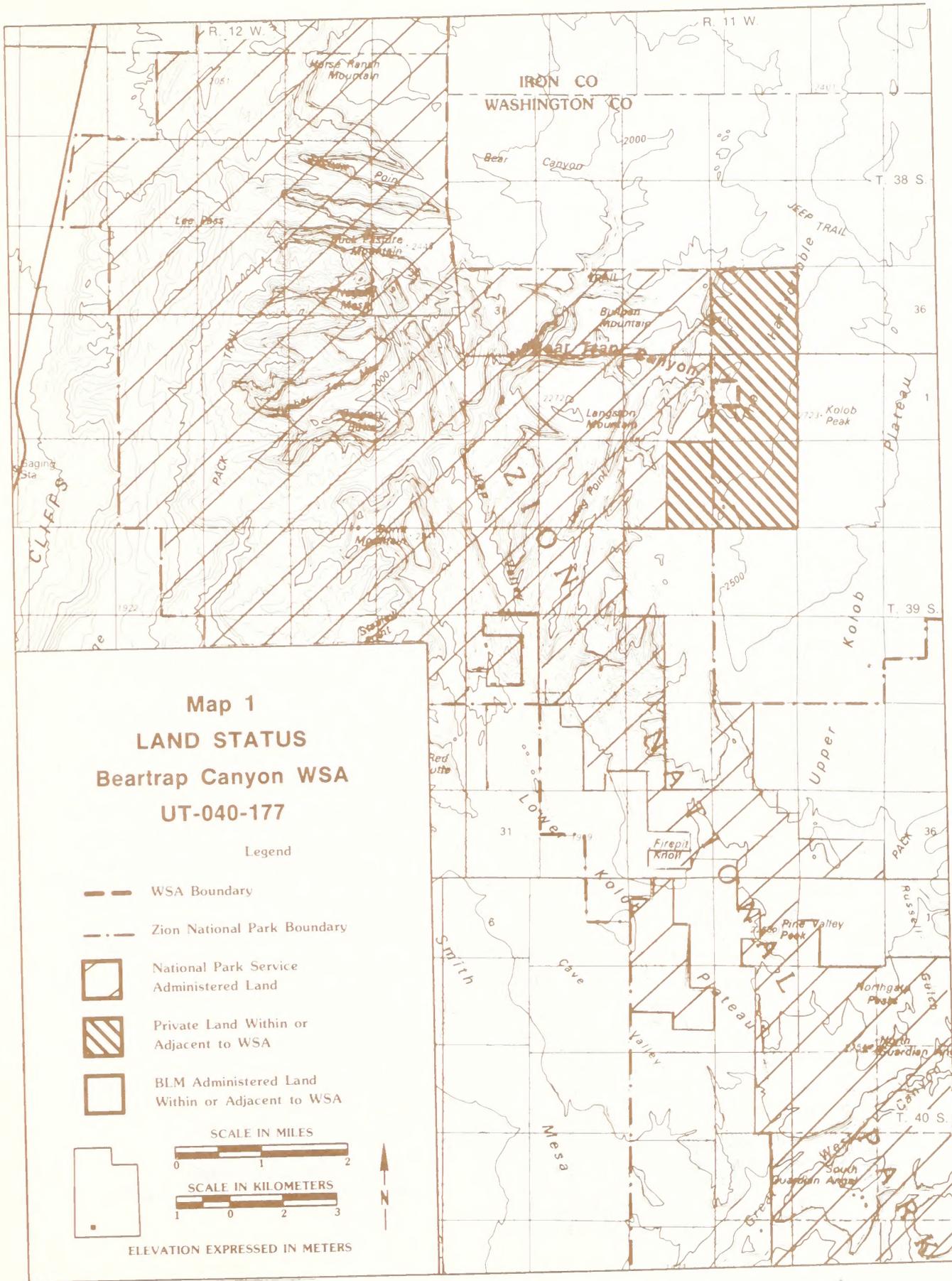
NO ACTION ALTERNATIVE

Under this alternative, none of the 40-acre Beartrap Canyon WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Virgin River Planning Unit Management Framework Plan (MFP) (USDI, BLM 1979b). No private, State, or split estate lands lie within or near the WSA (refer to Map 1).

The following are specific actions that would take place under this alternative:

- All 40 acres would remain open to mineral location, leasing, and sale. There are no mining claims in the WSA at the present time. Development work, extraction, and patenting would be allowed on future mining claims. Development would be regulated by unnecessary or undue degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing and future oil and gas leases could be developed under standard stipulations (Category 1) on the 40-acre area.
- Beartrap Canyon WSA is unallotted for livestock grazing due to steep and rough terrain.
- Developments for wildlife, water resources, etc. would be allowed without concern for wilderness values if in conformance with the current BLM land use plan. None of these developments are currently planned.
- The entire WSA acreage would be open to vehicular use and new access routes would be allowed.
- The entire 40-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The entire area would continue to be managed under Visual Resource Management (VRM) Class II.
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering

BEARTRAP CANYON WSA



BEARTRAP CANYON WSA

information would be allowed by permit provided they are carried on in an environmentally sound manner.

- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 40 acres of the Beartrap Canyon WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA lies adjacent to Zion National Park and is contiguous with a 120,620-acre NPS-proposed wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, the Beartrap Canyon WSA could be retained by BLM or transferred (along with nine other small WSAs) (refer to Map 3) to the NPS, who would then assume management responsibilities. For the purpose of this analysis it is assumed that BLM would retain management of the Beartrap Canyon WSA and it would be managed in part with the contiguous NPS-proposed wilderness in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981) to preserve its wilderness character.

No State lands are located in or adjacent to the WSA (refer to Map 1). The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

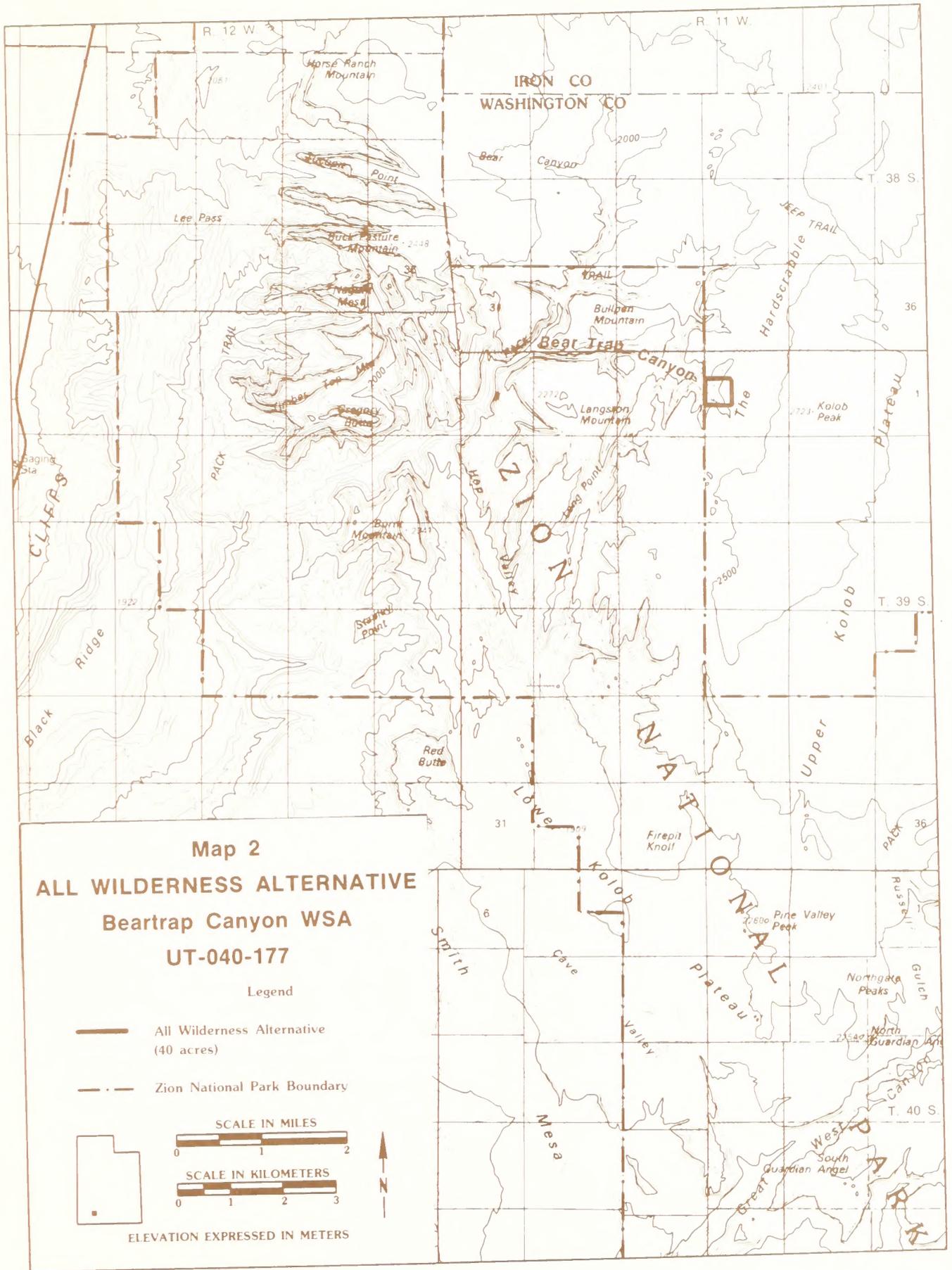
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 40 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Currently, no mining claims have been located in the WSA and the area is not leased for oil and gas.
- No livestock use has occurred in the WSA, and nonuse would continue.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions pre-

senting imminent hazard to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Beartrap Canyon WSA, and none are currently planned.

- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 40-acre area would be closed to off-road vehicle (ORV) use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions. There are no ways in the WSA nor are there any roads along the boundary of the WSA.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 40-acre wilderness.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

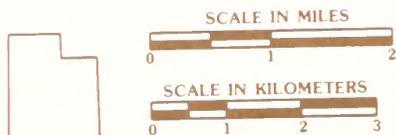
BEARTRAP CANYON WSA



Map 2
ALL WILDERNESS ALTERNATIVE
Beartrap Canyon WSA
UT-040-177

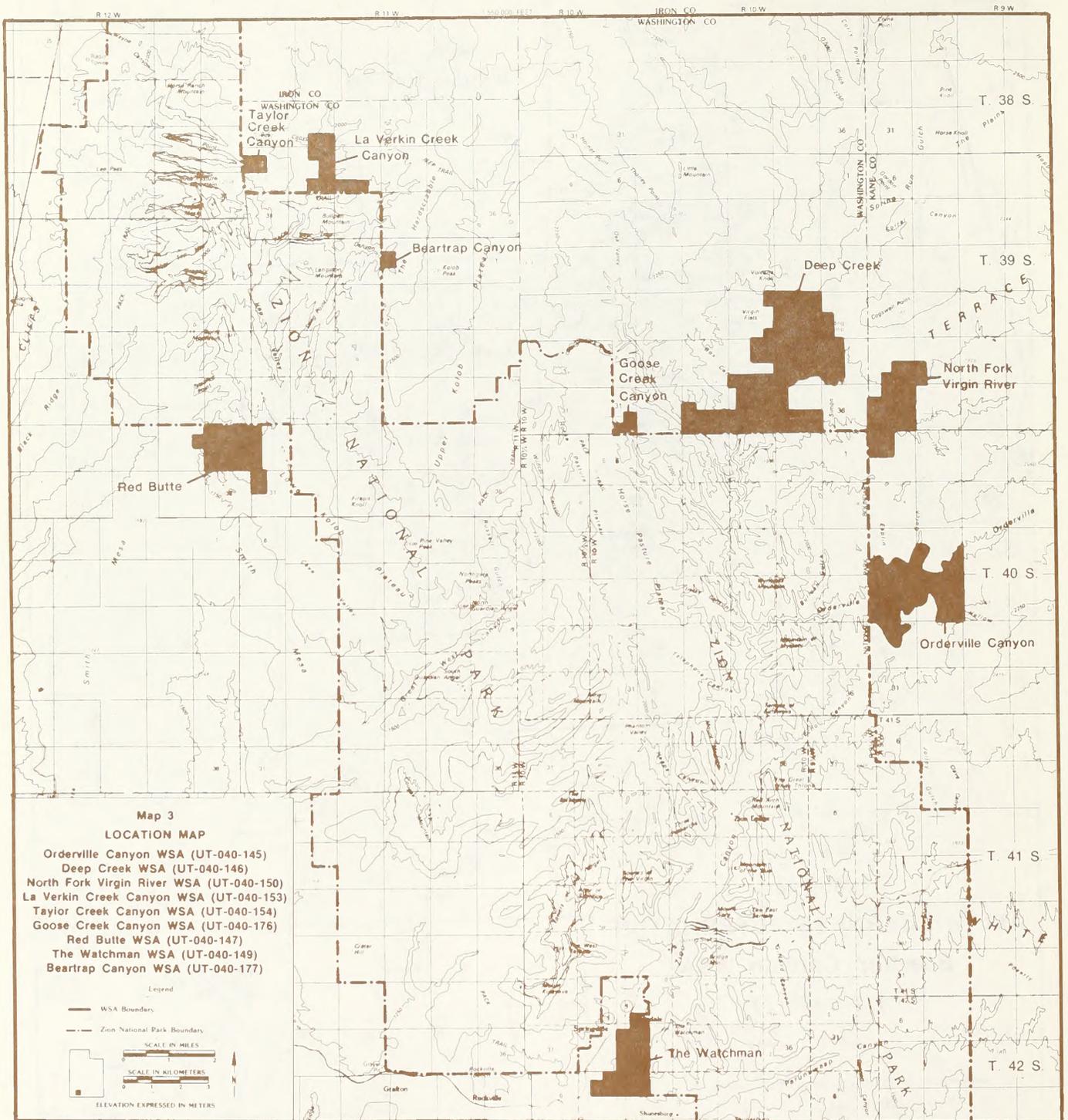
Legend

- All Wilderness Alternative (40 acres)
- Zion National Park Boundary



ELEVATION EXPRESSED IN METERS

BEARTRAP CANYON WSA



BEARTRAP CANYON WSA

- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

No appreciable environmental impacts would result from the No Action or the All Wilderness Alternative.

AFFECTED ENVIRONMENT

Air Quality

Air quality is excellent (Prevention of Significant Deterioration [PSD] Class II). Visual ranges in excess of 100 miles occur 75 percent of the time, and ranges in excess of 155 miles occur 10 percent of the time (USDI, BLM, 1980c). Zion National Park, contiguous with the WSA, is designated as Class I under the PSD regulations.

Geology

The Beartrap Canyon WSA lies within the Grand Staircase Section of the Colorado Plateau Physiographic Province. The WSA consists essentially of the upper portion of Beartrap Canyon.

Elevations range from 6,600 feet above sea level at the bottom of Beartrap Canyon to about 7,600 feet above sea level on the west side of the Kolob Peak. The main drainage is Beartrap Canyon which flows from east to west throughout the WSA.

Rocks of Jurassic age totaling about 1,000 feet crop out in the WSA. Underlying Mesozoic and Paleozoic rocks may be as much as 10,000 feet

thick (Hintze, 1973). Marine sediments of the Carmel Formation form the most extensive outcrops in the WSA, with about 400 feet exposed in the higher elevations. Approximately 600 feet of cross-bedded eolian sandstone of the Navajo Formation is exposed in the canyon.

No faults or other structures are known to occur within the WSA. However, the north-south trending Hurricane Fault is located approximately 8 miles west of the WSA.

Soils

The soils are mapped by the *Washington County Soil Survey* (U.S. Department of Agriculture, Soil Conservation Service, 1977) as Paunsaugunt-Kolob-Dalcan association or rock outcrop-rockland association. These are excessively drained, nearly level to very steep, shallow to deep gravelly silt loams, fine sandy loams, cobbly loams, and bare bedrock. The erosion potential is moderate to severe, and the erosion condition classification is slight. Erosion condition as determined by using soil surface factors is summarized in Table 1 (terms are defined in the Glossary).

Soils are used for range, wildlife, and recreation and are unsuitable for agriculture.

TABLE 1
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	0	0	0
Slight	0.6	40	100	0
Stable	0.3	0	0	0
Total		40	100	24

Sources: USDI, BLM, 1979a; Leifeste, 1978.

Vegetation

Over 500 plant species are known to occur in adjacent Zion National Park. Existing vegetation in the WSA is comprised primarily of coniferous forest. Vegetation is characterized by ponderosa pine, Douglas fir, white fir, aspen, and Rocky Mountain juniper. However, over 60 percent of the WSA (approximately 25 acres) is barren with rock outcrops. There are also hanging gardens in the WSA.

Available data indicate that no sensitive, threat-

ened, or endangered plant species occur in this WSA.

This WSA is in the transition of the Colorado Plateau and Rocky Mountain Forest Province Ecoregions, as shown on the Bailey-Kuchler eco-systems map (USDI, Geological Survey, 1978). This transition has a diverse vegetation, with plants from each of these ecoregions being represented. The potential natural vegetation (PNV) types of the WSA are Arizona pine forest and juniper-pinyon woodland (USDI, Geological Survey, 1978). PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

This WSA is located in the Virgin River subbasin of the Colorado River Basin hydrologic region. There are no existing water rights and the area is presently closed to further applications, although the Utah State Water Engineer has stated some applications could be considered, depending on water use and location. There are no withdrawals present in the WSA.

There are no perennial surface waters in the WSA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

An overall importance rating (OIR) of 1- was assigned to the Beartrap Canyon WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President

and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. There are no minerals currently listed as strategic and critical found within the WSA (Federal Emergency Management Agency, 1983).

The energy and mineral resource rating summary is given in Table 2.

**TABLE 2
Mineral and Energy Resource Rating Summary**

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic ft. of gas
Uranium	f2	c1	Less than 500 tons of uranium oxide
Coal	f1	c4	None
Geothermal	f1	c2	None
Hydroelectric	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

Oil and Gas

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development. No pre-FLPMA leases are found in the WSA.

Post-FLPMA leases in WSAs contain more re-

strictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

All 40 acres in this WSA are open to oil and gas leasing (Category 1). There is no land presently under lease. Based on similarities between the Virgin Oil Field (located approximately 16 miles south of the WSA) and this WSA and on the relatively unsuccessful history of exploration to date in the region, oil and gas favorability is considered low even though there is a potential for less than 10 million barrels of oil and 60 billion cubic feet of natural gas in-place in the WSA and vicinity.

Coal

The WSA is underlain by pre-Cretaceous rock not known to contain any coal.

Geothermal

No evidence is available to indicate that geothermal resources occur within the WSA.

LOCATABLE MINERALS

No prospects, deposits, or any other evidence of mineralization are known to exist within the WSA.

Uranium

No uranium deposits are known to occur within the WSA. The Moenave and Chinle Formations are the only rock units in this area considered favorable for uranium. SAI (1982) speculates that the Moenave and Chinle Formations within the WSA have a very low certainty for occurrence of uranium. It is estimated that the WSA and adjoining lands have less than 500 tons of uranium oxide.

Wildlife

Because this WSA occurs in the transition of two vegetation ecoregions, it supports a variety of animal species. The Virgin River Unit Resource

Analysis (USDI, BLM, 1979a) indicates approximately 300 vertebrate animal species could inhabit the WSA. These include 60 mammal species, 208 bird species, 20 reptile species, and six amphibian species. No critical wildlife habitat areas have been identified within the WSA.

Raptors may include golden eagle, bald eagle, peregrine falcon, prairie falcon, American kestrel, red-tailed hawk, and Cooper's hawk. The red-tailed and Cooper's hawks are the most common. The bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) are included on the Federal endangered species list. Bald eagles winter in the Virgin River drainage south of the WSA and also in Kanarraville and New Harmony valleys west of the WSA. Occasional sightings of these birds have been made, with most reports occurring in the Deep Creek-Goose Creek area. Nesting or roosting sites are not known to occur in the vicinity. No other threatened or endangered species are known to inhabit the WSA. The golden eagle, which may inhabit the WSA, is a BLM sensitive species.

Mountain lion activity in the vicinity is heavy compared to other areas in Utah. In past years the Federal Government has controlled the cougars in the area to keep livestock predation under control. During the 1976 hunting season 11 cougars were taken from UDWR herd unit 58 (which includes the WSA), the largest number for any herd unit in the State.

No acres are planned for vegetation treatment nor are any wildlife facilities proposed.

Forest Resources

Although there are some individual trees with commercial value in the Rocky Mountain forest zone, as a whole there are no commercial values to the forest resources in the WSA. There is presently no forest product use and none is planned.

Livestock and Wild Horses/Burros

Beartrap Canyon WSA is unallotted for livestock use because of steep terrain and lack of forage. Wild horses and burros do not use the WSA.

Visual Resources

This WSA was judged to be Scenic Class A, exceptional, during preparation of the Virgin River Unit Resource Analysis (USDI, BLM, 1979a). The WSA shares the same features as Zion National Park, one of the nation's most important

BEARTRAP CANYON WSA

tourist attractions with a worldwide reputation for scenic splendor. The VRM Class is II. Refer to Appendix 7 for a description of BLM's VRM rating system.

Cultural Resources

Petroglyphs, stone granaries, and rock shelters are known to exist in Zion National Park and the general vicinity. However, no archaeological inventory exists on this specific WSA and no cultural values have been identified.

Recreation

Recreational use of the WSA is nearly nonexistent due to its steep terrain. Access to Zion National Park cannot be obtained through the WSA because of high cliffs.

Visitor use data do not exist but it is estimated that the WSA receives 10 visitor days per year.

Wilderness Values

SIZE

The 40-acre Beartrap Canyon WSA is rectangular in shape, approximately .5 mile wide and .13 mile long. The WSA is not a viable independent candidate for wilderness designation if Congress does not designate the contiguous proposed wilderness area in Zion National Park. If managed in part with the contiguous NPS unit the WSA would be a viable wilderness area.

NATURALNESS

The imprint of man's work is substantially unnoticeable. There are no known imprints within the WSA.

SOLITUDE

The narrow sheer-walled canyons of Beartrap Canyon that continue into Zion National Park offer opportunities for solitude. The unit by itself is not considered to have outstanding opportunities for solitude; however, if considered in conjunction with Zion National Park, it would.

PRIMITIVE AND UNCONFINED RECREATION

The canyon bottoms of Beartrap Canyon offer primitive and unconfined recreation opportunities such as hiking, backpacking, and photography. The WSA by itself is not considered to have outstanding opportunities for primitive and unconfined recreation; however, if considered in conjunction with the proposed wilderness area in Zion National Park, it would.

SPECIAL FEATURES

The WSA has exceptional scenic values (geology and hanging gardens) as natural extensions of Zion National Park.

Land Use Plans and Controls

There are no State or private in-holdings, subsurface rights, or rights-of-way in the WSA. The land is presently used for unconfined and primitive forms of outdoor recreation and wildlife habitat. The NPS land adjacent to the WSA has been administratively endorsed for wilderness.

The Statement of Management for Zion National Park is "to maintain the quality and flow of water from all natural water sources that have been traditionally important in serving domestic needs and in perpetuating the Park's ecological communities" (USDI, NPS, 1976). NPS has shown interest in nondevelopment of adjacent lands in order that the Park's watershed remain unimpaired.

In 1984 the House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214, a bill designed to transfer jurisdiction of certain lands, including the Beartrap Canyon WSA, from the BLM to the NPS. In response to the hearing, the NPS assessed the WSA to determine its value for potential addition to the adjacent NPS unit (USDI, NPS, 1984). The NPS concluded that the Beartrap Canyon WSA would add a minor buffer to the Park but would be insignificant in value and contribution to the NPS unit. In a February 6, 1985 letter from the Secretary of the Interior to the Honorable John F. Seiberling, Chairman, Subcommittee on Public Lands and National Parks, Committee on Interior and Insular Affairs, the Beartrap Canyon WSA was recommended as suitable for inclusion into the adjacent unit of the National Park System. The letter indicated that the WSA did not meet all the NPS criteria for inclusion into the Park. However, there was no objection to transferring the WSA from BLM to NPS administration because the WSA is isolated by park and private lands and is uneconomical for BLM to manage. No Congressional action has been taken on that recommendation.

The *Washington County Master Plan* (Planning and Research Associates, 1971) identifies the WSA as an open space zone, and Washington County policy does not support wilderness designation for this WSA.

The WSA is managed under the BLM Virgin River Planning Unit MFP. (USDI, BLM, 1979b), which

allows multiple uses as noted in the Description of the No Action Alternative.

Socioeconomics

DEMOGRAPHICS

Kane and Washington Counties are the local, social, and economic influence zones of the WSA.

Kane County is rural with a total of 4,024 residents and an average population density of approximately one person per square mile (U.S. Department of Commerce [USDC], Bureau of Census, 1981). Washington County is also basically a rural county except for the population centers near the City of St. George. The total population of Washington County is 26,065 for an average population density of 10.8 persons per square mile.

EMPLOYMENT

The economies of both Kane and Washington Counties are dominated by three employment sectors: retail trade, services, and government. In Kane County both retail trade and government account for 17 percent of the total employment, and the services sector provides 14 percent. In Washington County the retail trade sector provides 21 percent, government 19 percent, and services 11 percent of the total employment. Personal income is in proportion to employment. Employment and income figures for the two counties are presented in Table 3.

INCOME AND REVENUES

Economic-related activities in the WSA are nearly nonexistent with the possible exception of recreation. No oil and gas or minerals have been produced from the WSA. Therefore, mineral and

energy resource production from the WSA has not contributed to local employment or income.

The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. Recreational use for Beartrap Canyon WSA is estimated as about 10 visitor days per year. Only a portion of the \$41 of expenditures for recreational use of the WSA contributes to the local economy of Kane and Washington Counties.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Beartrap Canyon WSA is located at the very extreme upper end of the Beartrap Canyon. The WSA encompasses only 40 acres confined into a steep narrow canyon, most of which is barren rock outcrop. Vertical walls and narrow canyon bottoms make the unit impassable. The potential uses of the WSA are practically nonexistent because of its site characteristics and its extremely low mineral potential (mineral OIR of 1- [SAI,1982]). No change in use of the WSA's environment is foreseen under the No Action Alternative or the All Wilderness Alternative. Therefore, no environmental impacts would result from wilderness designation or nondesignation. The No Action Alternative would be consistent with Washington County policy, but the All Wilderness Alternative would not.

BEARTRAP CANYON WSA

TABLE 3
1980 Employment and Personal Income
Kane and Washington Counties, Utah

Industrial Sector	Kane County		Washington County	
	Employment	Personal Income (\$1,000)	Employment	Personal Income (\$1,000)
Total	1,452	12,595	7,866	84,499
Proprietors	382	2,623	1,469	14,010
Farm Proprietors	122	136	343	2,386
Nonfarm Proprietors	260	2,487	1,126	11,624
By Industry Source	-	-	-	-
Farm	27	382	98	3,031
Nonfarm	1,043	12,213	6,299	80,418
Private	798	9,614	4,805	63,399
Ag. Serv., For., Fish, and Other	(L)	0	29	724
Mining	17	196	70	1,347
Construction	51	1,544	537	9,425
Manufacturing	70	566	698	9,759
Nondurable Goods	(D)	(D)	441	5,986
Durable Goods	(D)	(D)	257	3,773
Transportation and Public				
Utilities	150	1,875	236	4,996
Wholesale Trade	12	230	263	3,963
Retail Trade	252	2,364	1,673	14,741
Finance, Insurance, and				
Real Estate	39	392	424	5,201
Services	202	2,427	875	13,243
Government and Government				
Enterprises	245	2,599	1,494	17,019
Federal, Civilian	18	252	193	2,725
Federal, Military	30	78	161	425
State and Local	197	2,269	1,140	13,869

Source: USDI, Bureau of Economic Analysis, 1982.

(D) Not shown to avoid disclosure of confidential information. Data included in totals.

(L) Less than 10 wage and salary jobs.

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